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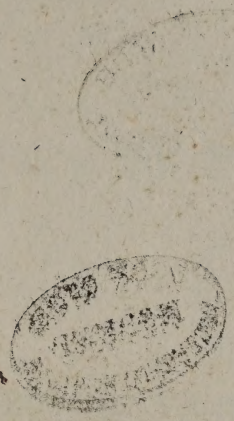

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PRINCIPLES OF PATHOLOGY,

AND

PRACTICE OF PHYSIC.

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BY

JOHN MACKINTOSH, M. D.

LECTURER ON THE PRACTICE OF PHYSIC IN EDINBURGH,

&c. &c. &c.

FOURTH EDITION.

VOL. I.

LONDON:

LONGMAN, REES, ORME, BROWN, GREEN, & LONGMAN;
J. CARFRAE & SON, AND MACLACHLAN & STEWART,
EDINBURGH; AND HODGES & SMITH, DUBLIN.

1836.

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TO

HENRY WARBURTON, Esq. M. P.

&c. &c. &c.

THIS WORK IS INSCRIBED,

AS AN HUMBLE TRIBUTE OF RESPECT AND GRATITUDE,

FOR THE GREAT BOON CONFERRED ON THE

MEDICAL PROFESSION

BY THE

ANATOMY BILL,

OBTAINED THROUGH HIS INDEFATIGABLE EXERTIONS;

AND FOR THE

IMPARTIALITY, TALENT, AND ASSIDUITY, WITH WHICH HE,

AS CHAIRMAN OF THE SELECT COMMITTEE OF THE HOUSE

OF COMMONS,

HAS CONDUCTED THE ARDUOUS INVESTIGATION INTO THE

STATE OF MEDICAL EDUCATION,

AND WHICH HAS EXCITED THE ADMIRATION OF

PERSONS OF ALL PARTIES,

BY

THE AUTHOR.

TO

SIR JOHN WEBB, K. C. H.

DIRECTOR-GENERAL OF THE ORDNANCE MEDICAL DEPARTMENT,

&c. &c. &c.

My Dear Sir,

In presenting you with two of the preceding editions of this Work, I can say with truth, that I was actuated solely by a desire of perpetuating a record of my esteem for your public and private worth,—and of my gratitude for the many acts of kindness received from you in the course of more than twenty-five years, during which period I have had the pleasure and honour of enjoying your friendship.

It is with no small degree of satisfaction, that I take this opportunity of again dedicating the Fourth Edition to you, in conjunction with Mr Warburton, believing that it will not be the less acceptable on that account.

I am,

My Dear Sir,

Your faithful and obliged Servant,

JOHN MACKINTOSH.

PREFACE TO FOURTH EDITION.

THE original object of this Work, was to provide those Gentlemen, who did the Author the honour of attending his lectures, with a Text-Book, in the hope that it might be found useful to them in prosecuting their studies. For some time the sale was confined to his own pupils, and the Work was entitled "*Heads of Lectures.*" But the Author was subsequently advised to launch the result of his labours before the professional public, with the title changed to that of "*Principles of Pathology, and Practice of Physic,*"—'trusting, that with all its faults and imperfections, it would be indulgently received as an humble attempt to establish a pathological system of medicine.' *(Preface to First Edition.)*

The success of this Work has far surpassed the Author's sanguine expectations; three large editions having been disposed of in the course of six years.

In offering a Fourth Edition to the Profession, the Author, very sensible of the respect due to its members, and of the flattering manner in which the Work has been received, has taken every precaution to render it worthy of a continuance of their patronage. It is considerably enlarged,—the import of every

paragraph has been well considered, many errors have been corrected, and the size of the type, and the quality of the paper, have been materially improved. He was so well aware of the imperfections of the Work, that he courted the remarks of several friends, well qualified, by their learning, experience, and ability, to undertake such a task; he has availed himself of their written and oral criticisms, and endeavoured to turn them to the best advantage. The Author stands particularly indebted in this respect to Mr Marshall, Deputy Inspector General of Hospitals, famed for a correct acquaintance with the literary, as well as the practical part of medicine,—for being an accurate observer, an inductive reasoner, and an admirable critic. If all his suggestions have not been adopted, more particularly as to pursuing an abstract style of writing, it has not arisen from any want of respect for his opinions, but merely because the Author entertains rather different sentiments.

The Author wishes his Work to be regarded merely as a book of facts, carefully collected and examined:—he lays no claim to be considered more wise, learned, or original, than any other professional man in the enjoyment of similar advantages, and who has pursued the same patient method of investigating diseases. He has been very sparing in the introduction of hypothetical discussions, and when he has attempted to explain or establish any point by reasoning, he trusts it will be found for the most part to be strictly inductive.

Whatever feeling may exist as to the manner in which he has treated the opinions of others, the Author knows that his efforts are perfectly sincere and well intended. In teaching the principles of a profession of such unbounded importance to mankind, he has ever felt himself called upon, by the combined influence of reason and humanity, to treat professional statements, theories, and practices, in the most unreserved manner. No duty is more incumbent on a medical writer, on

whose labours the lives and happiness of thousands may depend. The Author is not aware that he has ever been guilty of indulging in any expression which he would be afraid to repeat in the presence of the persons whose opinions he has impugned; neither can he be justly accused of bestowing praise from personal friendship, nor of condemning from personal animosity. He will never be ashamed or backward to confess an error, and he will feel no reluctance to give up every opinion he has formed, however long and arduous his investigations may have been, for others which may hereafter be proved to be more correct. He has given the best proof of the candour which actuates his conduct in the article on Cholera, in which he has felt himself obliged to repudiate all the opinions he entertained, when writing the former editions.

The Author most heartily deplores the morbid sensibility and irritability which exist among medical men,—no parallel to which can be found in the history of any other liberal profession. Few medical men can bear to know that the soundness of their opinions has been questioned; they regard any such attempt as a signal of deadly personal hatred, and view it in the same light as if their moral character were maliciously assailed. On what circumstances does this frame of mind depend? The Author has always attributed it to an overweening conceit, selfishness, and pusillanimity. Some may object to these statements, however true, being put in print, because they may think them calculated to injure the dignity of the profession, and to produce bad feeling. But the Author cannot believe in the existence of real dignity and good feeling, where there is such a deplorable want of high-mindedness and moral courage:—besides which, these pages are written exclusively for the professional, and not for the public eye. It cannot be denied, that practitioners in medicine stand too low in the scale of public estimation, and that "something is

rotten in the state of Denmark." But the Author trusts soon to see an important change in the profession, the first steps towards which must be *a considerable modification of corporation privileges*, and a greater degree of care and discrimination on the part of those who teach the different branches of medicine, in exciting industry and zeal among their pupils, and inducing them, by precept and example, to regard the profession of medicine more as a science, and the blessed means of doing good, than as a corrupt jobbing trade. Much substantial good might also be effected by examinators for medical diplomas, were they to feel that their own personal honour depended, more on the high moral and professional qualifications of the gentlemen admitted into the profession, than on the amount of fees received.

The facility of granting Medical Degrees in all the Universities of Scotland, has been quite disgraceful. It would not be difficult to point out many persons who would be puzzled to conjugate a verb, or decline a noun, in any of the dead or living languages, and who could not, if their lives depended on the result, write, or even speak their mother-tongue correctly, who, nevertheless, have had the credit of writing a long and elaborate Latin essay, and have successfully gone through a hocus-pocus examination before learned Professors! This trade of granting Degrees in Physic on the part of the University of Edinburgh, attracted the attention of the members of the Royal Commission appointed by His Majesty to inquire into the state of the Universities in Scotland, who were astonished at the small increase of students, compared with the large increase of graduates during the course of twenty years, from 1806 to 1826. At page 167. of the Appendix to the General Report, the Commissioners state, "that the increase from 1806 is very great, and cannot be accounted for by an increase of Medical Students, for in 1806, the number was 764, and in 1826, only 896, that is, there was

an addition of 132 students; but this bears no kind of proportion to the *multiplication of Degrees* from 37 (in 1806,) to 118 (in 1826)." But with all due submission to the Honourable Commissioners, the result can be easily explained. The first principles of *natural* philosophy, which slumbered in other places, advanced rapidly in the University of Edinburgh after the year 1806;—a strong desire had prevailed to discover the philosopher's stone—this, it is well known, failed, but the Edinburgh Professors soon arrived at that supreme degree of mental perfection, to find out the value of the precious metals, which they afterwards manufactured in a wholesale manner, by converting pieces of parchment into gold. It was not every Professor that was considered sufficiently skilled in philosophy, to entitle him to participate in the handsome pecuniary dividend—no! no! Here again there was a monopoly confined to six Professors, who would not permit the others to share the spoil. But as this transaction may not be credited, the Author will quote another passage from the same Report. "It does appear quite unreasonable, that when there are belonging to the University a number of Professors, who must be supposed equally skilled in Medical Science, there should be a monopoly of examinations to a particular part of them, *apparently for no other purpose than that the persons so favoured may receive the addition to their emoluments arising from the fees paid to the examiners.*" (Page 167.)

There is likewise a curious circumstance in the history of the Scotch Universities. It is well known, that of these, St Andrew's and Aberdeen had been in the habit of granting Medical Degrees upon certificates from qualified persons in the Profession, without the personal appearance of the candidate, and consequently without the safeguard to the public of an examination. This was done for ages, and no public remonstrance was made from any quarter. The University of Edinburgh went on with her monopoly and dis-

reputable practices, and she quietly allowed the sister institutions to do as they pleased. But in the year 1833, the University of St Andrew's, (simultaneously with the Universities of Oxford and Cambridge,) remodelled her laws, reduced the graduation fees to the same standard as Edinburgh, improved the course of study, and *appointed competent examiners*, which satisfied the public that none but well qualified persons could obtain a degree at that University. But it did not satisfy the Professors of the University of Edinburgh, that it would not destroy their monopoly, and rob them of their "loaves and fishes." It cannot be too extensively known, that the University of Edinburgh allowed a system, injurious to the public, and derogatory to medical science, to continue for ages without uttering one word of complaint; yet no sooner was an excellent system established, a system avowedly better than her own, than she commenced a war of agitation, by which she intended to shake the very walls of Windsor Castle, if His Majesty would not put an extinguisher upon the St Andrew's Examiners. Memorials were drawn up, petitions were presented, the highest law authorities were retained; other Universities and Colleges were enlisted in the unholy cause; by an intrigue, the College of Surgeons of Edinburgh was induced to join hands in the crusade, and petitioned the King in Council to *do an illegal act*. But the triumph of justice has been complete. Many persons of considerable eminence, and of high moral worth, repaired to St Andrew's in the mean time, and having undergone strict examinations, received their Degrees. The result has been, that a plan nearly similar to that of St Andrew's has, it is believed, been adopted in London by the King and Council, who by charter established a Central Board of Examiners, to grant Medical Degrees to all candidates who may be found well qualified, whether they have acquired their medical edu-

cation within or without the walls of a University, that is, under Professors or Lecturers.

Thus, aided by accidental circumstances, has the Author, by devising and planning the improvements adopted by the University of St Andrew's, succeeded in destroying the most odious monopoly that ever disgraced British legislation. The Author feels that he is justified in applying the term "*odious monopoly*" to any system that retards the progress of that science upon which the health and happiness of every one depends.

The Author trusts to the wisdom of Parliament for the speedy enactment of more liberal and equable laws respecting Medical Education; the adoption of a uniform system for all the Schools; and a more rational mode of granting degrees in Universities. It is to be hoped that the New Institutions, which must, as a matter of course, follow the recently chartered establishment in London for the granting of Degrees, will be formed upon similar principles.

EDINBURGH, 31. ALBANY STREET,
1*st January* 1836.

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PART I.

GENERAL HISTORY OF INFLAMMATION AND FEVERS.—
WITH THE PATHOLOGY AND TREATMENT OF
INDIVIDUAL FEVERS.

CHAP. I.

ON INFLAMMATION.

HISTORY OF THE GENERAL DOCTRINES, CAUSES, PHENOMENA, AND EFFECTS OF INFLAMMATION.

In the history of Medical Science, we find no subject has attracted more attention than that of inflammation; the minds of the most distinguished pathologists having been turned to the investigation with an ardour which has never been surpassed. This is to be attributed to the importance of the subject,—to the frequent occurrence of inflammation,—and to the wide range of diseases which owe their origin to this morbid action. According to many authors, inflammation and fever are thought to be mere modifications of the same pathological state of the system, while others speak of them even as synonymous terms; hence, a successful elucidation of the former, was expected to prove a triumph over the difficulties of the latter.

This interesting subject still continues to command the attention of every new inquirer,—doubtless owing to the mystery in which he finds it involved; for it must be confessed, that notwithstanding the indefatigable labours of John Hunter and others, it does not appear that any very strong light has been thrown on the true pathology of inflammation; while it could easily be proved that much obscurity has been produced, by confounding cause and effect, and by regarding some of the phenomena as principal parts of the essence of inflammation. A great mistake has also been committed, by medical in-

quirers following out an erroneous method of investigating diseases, forming false analogies, and attributing to inflammation of internal organs, all the phenomena and characters of those situated on the surface of the body,—thus drawing too largely from surgical pathology. But it may be stated, that the most deadly inflammation of important organs may proceed to a fatal termination, some with few, others with none of the symptoms hitherto universally attributed to inflammation.

In giving a history of the doctrines which have prevailed, it would be a waste of time to quote the opinions maintained previous to the time of Boerhaave, because they were inconsistent with the knowledge we now possess of the circulation of the blood. Boerhaave insisted that inflammation is produced by an obstruction to the free circulation in the capillary vessels. Obstruction, he conceived, might be occasioned by too profuse a flow of any of the excretions, and by heat, or the application of any other cause which dissipated the thinner parts of the blood, thereby producing viscidity. When this thickened state of the blood did not exist before the production of inflammation, he imagined that the larger globules of the blood found their way by some accident into the capillaries, and produced obstruction. But when the perspiration, the flow of urine, or any of the other excretions were suppressed, then he supposed the capillaries became so much distended, as to allow the thicker parts of the blood to enter, creating a more permanent obstruction; and this state he termed an *error loci*. Thus, it will be seen that Boerhaave had two causes of inflammation,—viscidity of the blood, and an *error loci*, either of which he supposed capable of producing an obstruction in the circulation of a part, giving rise to increased action in the heart and other vessels, and exciting a flow of blood in the direction where the obstruction existed. He, however, felt the necessity of having the assistance of some other cause, to enable him to account more satisfactorily for the morbid terminations which occasionally happen, and therefore brought into play the humoral pathology, by stating that there is sometimes an acrimonious state of the fluids, which tends to produce gangrene.

That part of his doctrine relating to viscidity, cannot support the phenomena, the viscidity being more likely to produce a general than a local effect, since the whole mass of blood must be supposed to be in the same state. But there is rather more probability in the *error loci ;* for it is a fact, that in inflamed parts, red blood enters into vessels which, in a state of health, circulate only a colourless fluid. But here there is some difficulty in determining whether or not the *error loci* is an effect, and not a cause of inflammation ; and the difficulty is increased, when we reflect, that vessels frequently circulate red particles, which usually contain a colourless fluid, and yet inflammation has neither preceded, attended, nor followed this remarkable change.

On looking at the history of medical opinions on this subject, we shall observe, that, as the humoral pathology declined, Boerhaave's doctrines began also to lose ground, although the phenomena of inflammation were, in many cases, ingeniously explained by their assistance ; and it must be confessed that we have abandoned this doctrine, which is far more ancient than the time of Boerhaave, without sufficient consideration.

Stahl and Hoffman attempted to improve Boerhaave's doctrines, by bringing into account the influence of the nervous system on the capillary vessels in inflammation. On this occasion, little need be said respecting the views of these celebrated men, as it will be necessary to resume the subject in a subsequent part of the work. But it may be noticed, that it has always appeared to me a strong proof of the close connection between the state termed fever, and that of inflammation, that almost every individual labourer in this field of investigation has adduced the same, or nearly the same doctrines, to explain the phenomena of both. Hence the pretty general belief as to their identity. But it will soon be my duty to offer many reasons for dissenting from this too sweeping pathology.

This slight notice of the opinions of Boerhaave, Stahl, and Hoffman, is sufficient to enable me to connect their views with those of modern date. The doctrines taught by Cullen were founded upon those of the last three physicians. He admitted the obstruction so much insisted on by Boerhaave, but denied

that it was produced either by *error loci*, or lentor of the blood. He also took advantage of the hint which had been given by Stahl and Hoffman, respecting the influence of the nerves, and insisted that the obstruction was produced by "spasm of the extreme arteries, supporting an increased action in the course of them." Cullen maintained this doctrine even in those cases in which external inflammations are occasioned by the application of boiling water, blisters, and other stimuli.

The only observation it appears necessary to make, after giving this slight sketch, is, that all these illustrious physicians have been guilty of confounding cause and effect. When we place a ligature upon a large vessel, we do not find that general inflammation of the limb follows as a matter of course, which nevertheless ought to happen if mere obstruction were the cause of inflammation. This obvious objection has not escaped authors; and it has also been remarked by the acute mind of Allan Burns, that the effusion from the capillaries into the cellular membrane, which takes place so frequently as the effect of inflammation, cannot be explained if the doctrine of spasm be admitted. Besides, Cullen has been guilty of a logical blunder, in attributing the proximate cause of inflammation to spasm of the capillaries, when, according to his own shewing, the spasm is occasioned by an accumulation of blood in these vessels.

According to John Hunter, inflammation is to be considered only as a distracted state of parts, which requires another mode of action to restore them to a state of health; or, in other words, that inflammation is a healthy action, which follows an injury of some tissue or organ. In another place, he states that active inflammation is to be considered as an increased action of the vessels, which consists simply, in the first instance, in a distension beyond their natural size. This he supposes to depend on the elasticity of the vessel, and a weakness of its muscular power. The whole of this he considers as a law of nature; and he seems to have believed, that the blood-vessels possess within themselves an innate active power of dilatation.

This leads me to state, that two modern opinions on this subject divide the profession. According to the one, inflammation

depends upon increased action of the capillaries of the part. According to the other, it is produced by debility or weakened action of the same vessels, and increased action of the trunks. On each side of this intricate and difficult question, are ranged the names of very eminent men ; but, as will be shewn in the sequel, they might have spared themselves a great deal of trouble. Both parties found their opinions upon microscopical experiments, performed on the web of the frog's foot. Each observed the same phenomena, but they have drawn different conclusions. Dr Thomson, for instance, applied salt to a frog's foot; the first effect was to increase the velocity of the circulation, and to make the vessels larger to the naked eye, and of a brighter red colour. After the stimulant had been continued some time longer, the red globules became " less distinct than before the application of the salt, and obviously less distinct *from the rapidity of their motion.*"

Dr Wilson Philip performed experiments prior to Dr Thomson, on the frog's foot; and having first proved that he could create increased action in the capillaries without exciting inflammation, happened to meet with one unfortunate frog, who had already by some means contracted inflammation ; and he found, upon applying the microscope, the vessels greatly dilated, and the motion of the blood extremely languid ;—and he says, " It was at once evident, on observing the part through the microscope, that where the inflammation was greatest, the vessels were most distended, and the motion of the blood was slowest."

Dr Wilson Philip wetted the web of the frog's foot with *distilled spirit*, but although he continued to keep it moist for ten minutes, or a quarter of an hour, he could not perceive the slightest symptoms of inflammation. " The vessels, instead of appearing redder and more turgid, were evidently *paler* and *smaller* than before the application of the spirits." No wonder. Distilled spirit is the most deceitful application he could have used for such an experiment. In the first place it might stimulate the circulation in the part, but its quick evaporation would *necessarily* produce coldness, which, no doubt, caused *contraction* of the vessels, and rendered them *paler* and *smaller.*

Dr Hastings has subsequently repeated these experiments, corroborating those of the last named author. In all the experiments, whether performed by Thomson, Wilson Philip, or Hastings, the velocity of the blood is represented to have been increased in the capillaries, in the state of simple excitement; but it constantly happened, when inflammation commenced, that no globules could be seen in the blood of the affected vessels. Now, whether are we to join Dr Thomson in concluding, that they cannot be seen because of the "*rapidity of their motion*," or Dr Hastings and others, who state that the blood in an inflamed part, becomes itself morbidly changed, so that no globules can be detected? The point in dispute is thus brought within a very small space, and the reader is left to form his own opinions. The result of my investigations on the subject, shall now be detailed; and it may be stated, that this has not been done hurriedly, but after considerable experience, and a very careful review of all that has been written on Inflammation.

It appears to me, that the view taken by Mr Syme, in an Essay on Inflammation,* is the most correct. He thinks that too much attention has been directed to the obvious signs of inflammation, viz. redness, heat, swelling, and pain, and too little bestowed on the *altered functions of the part*. Mr Syme justly thinks, that "if this remarkable character of inflammation had been kept in mind, pathologists would hardly have spent so much labour in disputing about contraction and dilatation of the vessels, since it is obvious, that mere difference of capacity, though it might, to a certain extent, account for the redness and swelling, could never enable us to explain the alteration of function, any more than a knowledge of the size of capillary vessels could instruct us as to the mode in which their secretions, &c. are performed during health."—And he maintains, that "redness and swelling ought to be secondary considerations in the investigation of the inflammatory state, in comparison with the grand distinguishing character of *altered function*."

Three points seem to have been much overlooked by writers

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on Inflammation. 1*st*, The influence of the nervous system; 2*d*, The changes in the qualities of the blood itself; and, 3*d*, The disordered functions of the capillaries. I have performed experiments upon horses, which prove most satisfactorily the influence of the nerves, even in Chronic Inflammation. It is well known that these animals are very liable to inflammation in the foot, from different causes; and I have seen horses who had been lame for months, cured by dividing the nerves immediately above the fetlock joint, the effect being sometimes instantaneous, and occasionally permanent. With regard to the second point, there can be no doubt that the blood in the part affected becomes diseased; the red particles cease to be observed, and the blood assumes a flocculent appearance, becoming darker and darker, and the vessels become in some degree obstructed. It is not improbable that this change on the blood may be found to depend partly, if not principally, upon the cessation of nutrition and exhalation, and at the same time a stop being put to the conversion of arterial into venous blood.

It has been long known, that increased action of the vessels does not constitute Inflammation, as we see every day illustrated in the act of blushing, and by the employment of friction to any part on the surface of the body. In these instances, the vascularity soon subsides on the removal of the causes. But we can produce actual inflammation by a continuance of the friction; the blood will accumulate, and we shall have all the phenomena, and the usual effects of slight superficial inflammations. It may be produced also by obstructing the flow of blood in the limb for a sufficient length of time by applying a ligature, and this is what actually happens in a case of strangulated Hernia.

Diminished action of the vessels may be produced and maintained for some considerable time, and the effect will perhaps be, not inflammation of the part itself, but of another part of the body at a distance. Again, if inflammation has been excited in an organ, an increased flow of blood takes place towards it, and all other parts must consequently suffer from a diminished supply of arterial blood; this increases the embarrassment in all organs,—hence the general constitutional

disturbance. In the practice of Physic, this last circumstance is too frequently overlooked. Physicians are apt to expect a cessation of the constitutional symptoms the moment the original disease is subdued; this not being the case, they often push their remedies far beyond the proper point, and make matters worse. This is perhaps more peculiarly a British error, and we are justly condemned for it by our continental brethren. Other Physicians, again, do very great mischief by stimulating and throwing in bark and other tonics too soon after convalescence has commenced;—they will be found in the morning ordering a large bleeding, and in the evening a stimulant. Cases no doubt occur in which a more immediate change of treatment may be necessary; all that is wished to be impressed upon the reader in this part of the work, is, that such practice is too often had recourse to, more from an unfounded *dread* of the occurrence of "typhoid symptoms," than from real necessity; and that sufficient confidence is not placed in the powers of the constitution, to repair injuries which have been sustained. Physicians are too often found tampering with the human frame, as if it resembled a piece of machinery of their own construction.

The essence of inflammation, partly consists in more blood entering by the arteries than can escape by the veins, or than can be made use of, as when the part is in a state of health, when its functions are actively performed; the consequence is an accumulation of blood, or congestion and effusion from partial obstruction; and it is, I imagine, this degree of obstruction which produces the throbbing. The vessels of the inflamed part are greatly dilated, and the number which contains red blood is greatly increased.

It must be confessed, that in inflammation there is much undiscovered. Physiologists have to settle several disputed points in the doctrines of the circulation; and Anatomists have to discover a great deal regarding the Anatomy and Physiology of the capillary and nervous systems, before Pathologists can be expected to advance their part of the science of Medicine in any remarkable degree.

Considerable difference of opinion still exists among Physiologists, whether the circulation of the blood in the capilla-

ries depends entirely upon the *vis à tergo* it receives from the heart, or whether these vessels possess an impulsive power independently of the heart's action. Those who examine this subject without preconceived notions, and with no other view than to discover truth, cannot reject the *vis à tergo* which the whole column of blood is regularly receiving from the heart. Neither can they reject the action which the vessels possess from their elasticity, in aiding other parts of the machinery, not to mention their power of contracting themselves even into much smaller diameter than is natural to them, when circumstances require it for the preservation of life. With respect to the first point, it will be observed, that if one of the smallest arteries in the body, and at the greatest possible distance from the heart, be divided, the blood will be perceived to flow *per saltum*, the jets corresponding to the action of the heart. As to the second point, if the extreme vessels are quiescent, not possessing any power of acting within themselves, and depending entirely upon the action of the heart, how could irregular determinations of blood take place? When any internal organ is inflamed, we are taught, by experience and observation, to apply blisters and other irritants to the surface of the body, as a part of the remedial process. These applications excite a temporary inflammation on the surface, sometimes to the complete relief of the internal disease. This translation, as it may be called, is not affected through the agency of the heart, by the contractions of which the blood is propelled into the vessels generally; it can, in all probability, have no power to send blood to one part, in preference to another.

The results of experiments lead me to believe that some notable errors or oversights have been committed by Hunter, and many other experimenters upon the circulation. In the essay above alluded to, Mr Syme, in endeavouring to refute the received notions respecting the circulation in the capillaries, makes the following statements:—"In this case, also, we ought to discover, through the microscope, not only a change in the capacity of the capillaries, but an oscillatory movement of the globules passing through them. Instead of this, we see the capillaries apparently quite rigid and immoveable, while the globules shoot through them in such a free, uncon-

strained manner, as to convince every observer that they are not impelled by a *vis à tergo*." The results of one of Mr Syme's experiments are worthy of being quoted in his own words :—" I have repeatedly seen the globules continue in motion through the capillaries of a frog forty minutes after the whole heart was excised. And this motion was not uniform,—either as to direction or velocity, in which case the gradual contraction of the vessels might have been supposed adequate to account for it,—but sometimes this way, sometimes that,—at one time quick, at another slow,—and always continuing quickest as well as longest in the smallest vessels. While in health, the motion of the blood is slowest in the capillaries."

Having been an eye-witness to these experiments, I can add my testimony as to their correctness, and that every precaution was taken to guard against the possibility of any fallacy.

Before concluding this subject, I beg to enter my protest against the employment of the term "debility," as too generally applied to the capillary vessels of an inflamed part. If a man were able to walk three miles in an hour with an ordinary burden on his shoulders, it surely would not be correct to say he is in a state of debility, because he could not go over as much ground if he had to carry an additional hundredweight. This is exactly the condition of the blood-vessels; they are well able to perform their natural functions, but when over-loaded, they are rendered incapable.

Causes of Inflammation.

In stating the Causes of Inflammation, it is my intention to avoid adverting to occult causes. In medical investigations, it is very injurious to science to affect being overwise, and it is surely more philosophical to confess our ignorance, than to attempt, by special pleading, to leap over difficulties, which, in the present state of our knowledge, are insurmountable. Instead of descanting at great length upon proximate, remote, exciting, and predisposing causes, it will be better to speak of common and specific Causes of Inflammation. The disease itself is improperly termed by Cullen

and others, the "proximate cause;" this term will, for a considerable time to come, be fostered by symptomatical physicians, who call the symptoms the disease, and the disease the proximate cause; but there is no reason why it should be retained in this work, unless it were employed to denote the proximate cause of the *symptoms*. As to predisposing causes, it is more consistent to take them into consideration, when treating of prevention of diseases; but many writers have been guilty of great absurdities even with regard to their influence in the production of disease. One author, with whose writings most medical men are well acquainted, in treating of the predisposing causes of hooping-cough, mentions, among others, "a serous temperament,—a scrofulous constitution,—dentition,—a disposition to contract catarrhal affections,—the retrocession of eruptive diseases."

The common causes in the production of internal inflammation are, exposure to cold; sudden vicissitudes of weather, particularly when the air is damp; irregularity of bowels; unwholesome diet; insufficient clothing; cold drinks, particularly when the body is warm; depressing passions, &c. Almost all these causes tend to produce inflammation in the same manner, by inducing irregular distributions of the blood and venous congestion. The lost balance of the circulation is marked sufficiently well in the beginning of almost all acute diseases, by the accession of rigors, coldness, and paleness of the surface of the body. Some individuals are more liable to inflammatory attacks than others, and some to inflammation of a particular tissue or organ. Such persons may well be said to be liable to, or susceptible of, such disease; there can therefore be no objection to the term in this limited application.

Few persons escape inflammatory affections produced by specific causes. The contagion of small-pox is termed a specific cause, because nothing is capable of producing the disease but its own contagion, in whatever way it is communicated. Measles is produced by a specific cause. Scarlatina also, and *perhaps* hooping-cough. Erysipelas is not to be ranked with these specific diseases, because it is not produced by a specific cause, as is too generally imagined. If erysipelas were produced twenty times, by inserting matter

taken from an erysipelatous surface, expressly for the sake of experiment, still it cannot be ranked as a specific disease, because it has also followed an injury produced by a splinter of wood, a perfectly clean sewing needle, a rusty nail, &c. It has also occurred after a prick received in dissection. No one ever alleged that small-pox, measles, or scarlatina, were ever produced in this fortuitous manner. It may be also mentioned, that there are other matters, the nature of which is unknown, but the effects of which are capable of producing inflammatory affections, viz. malaria, sometimes denominated marsh miasm, and human effluvia, together with another and still more mysterious agent, epidemic influence. But it appears to me, the great agent in the production of inflammatory affections is the sudden application of cold to the surface of the body, particularly when the stomach and bowels are out of order, and the mind depressed. Cold wet feet, for example, will sometimes produce determination to the head, and phrenitis will be the consequence ; or to the lungs, producing pneumonic inflammation, &c. Dr Thomson, in his work on Inflammation, states that this cannot be explained upon any principle. The doctrine of determination of blood explains it so far, and in my humble opinion quite far enough for all practical purposes. It is not, however, actual, but relative cold, which is so prejudicial to the human body ; it is exposure to cold when the body has been previously much heated.

An individual, after sudden exposure to a cold damp atmosphere, may be attacked by inflammation of the lining membrane of the air passages. It becomes an interesting and important question to determine upon what part of the human frame the cold air acts. Dr Thomson says, at page 57. of his work on Inflammation : " In some instances cold, or a diminution of temperature, seems to act more directly upon the parts with which it comes in contact. We have proof of this in the inflammation of the mucous membrane of the nose, fauces, trachea, and bronchiæ, from the inhalation of cold air." This is a most unhappy illustration. It is apparently a matter of little consequence how cold is the air that passes into the lungs, provided the body be sufficiently protected by warm clothing. In cold regions, if Dr Thom-

son's hypothesis were true, an individual ought never to be free from bronchitis. We are assured, however, that the sailors in the voyages of discovery, which were made by Captain Parry and Captain Ross to the North Pole, enjoyed remarkably good health.

There is another curious point which must be noticed. Extreme cold produces exactly the same sensations and the same effects upon the living animal fibre as intense heat. Take a piece of frozen mercury in the hand, and it will cause a sensation similar to that produced by hot iron,—inflammation and vesication follow; and if applied long enough, destruction of the part will take place. The hot iron destroys vitality by the addition of too much caloric; the frozen metal, by abstracting it too suddenly.

Division of Inflammation into varieties.

Inflammation has been variously divided and subdivided. The terms acute, sub-acute, and chronic, shall be employed in the course of this work, as being sufficiently precise, and well understood. It is wished to avoid the use of the term "passive," because it is employed too vaguely, sometimes to express the existence of sub-acute inflammation, at others that of the chronic kind. John Hunter also instituted the terms healthy and unhealthy. Is inflammation a disease? If it be, it is certainly not proper to call it healthy. Other varieties of inflammation have been mentioned, as scrofulous, gouty, rheumatic, erythematic, erysipelatous, &c.; but it is my belief, that as pathology improves, these terms will be less frequently employed. Another obvious division of inflammation depends upon the tissue or organ affected.

Phenomena of Inflammation.

External Inflammation is characterized by redness, swelling, heat, and pain. All these taken together, leave no doubt as to the existence of inflammation. In this respect, surgeons have the advantage of physicians. They can see and feel the part affected, in addition to the power of judging from the constitutional symptoms, and the account the patient gives of his own sensations. Whereas in physic we have

greater difficulties to encounter in forming a diagnosis. We observe local and constitutional symptoms also; but it does not always follow, because there are dyspnœa and fever, that the lungs are inflamed; the disease may be inflammation of the pericardium. There may be violent vomiting, tenderness in the epigastrium, thirst, with more or less fever, while the disease is in the head. There may be severe local and constitutional disturbance, without the existence of the slightest degree of inflammation, merely from a neuralgic affection of some tissue or organ, or from impeded function of some viscus. During life we cannot see the state of internal organs, to ascertain whether they are red and swollen; and a sensation of heat, pain, and fever, may exist without the least inflammatory action. It will be proved, in a subsequent part of this work, that the pulse cannot be depended on. With respect to buffy blood,* it may exist without actual inflammation; and, in inflammatory complaints, the blood does not always yield it. The shape of the dish modifies this appearance, as does the manner in which the blood flows from the vein. Mental agitation and fatigue produce the buffy coat. Sometimes it does not appear on the blood till the patient has been largely and repeatedly bled. I am inclined to place considerable dependence, however, on the buffy coat, *taken in connection with other circumstances*, particularly when the surface is also concave, or "cupped," as it has been termed, and when the quantity of serum is proportionably large.

It has often occurred to me to see dissections where great destruction of vital organs had taken place from inflammation, and yet there had been little or no pain complained of during life. Nay, I have seen instances of inflammation of the pleura to such a degree as to occasion death, where the symp-

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* Blood is said to be "buffy," when the surface, instead of being of a reddish colour, presents a yellowish crust of greater or less thickness. There are various opinions as to the cause of this appearance. Some attribute it to the slower coagulation of the blood; others to an increased quantity of fibrine; or merely to the hurried state of the circulation. Of one fact I am quite certain, from repeated observations, that blood may be seen to be buffed while it is yet flowing from a vein, and before the stream has reached the cup.

toms were too slight to direct the medical attendants to the true seat of the disease.

No pathological physician will join Dr Gregory, a modern writer on the Practice of Physic, in the following dogmas: "*Delirium marks inflammation of the brain; impatience of light, ophthalmia; hoarseness, inflammation of the larynx; and dyspnœa, that of the lungs.*" The practice of physic would indeed be simple and certain, were these things true. But this is not the proper place to enter upon a refutation of such arbitrary and erroneous assumptions.

The uncertainty of the pulse has been already mentioned. Inflammation may be going on towards a fatal termination, in an important organ, without any febrile movement. This was noticed long ago by Morgagni, Valsalva, and others, and it led them too hastily to conclude, that mortification of internal organs occasionally took place without the previous existence of inflammatory action.

What occasions the redness, swelling, heat, and pain, in external inflammations? The *redness* is occasioned, no doubt, by the enlarged size of the vessels, and the increased quantity of blood in the part affected. Vessels which formerly transmitted a lymphy fluid, now circulate red blood.

The swelling has been erroneously ascribed to the expanded state of the blood from increased heat; but it has been proved, that the blood contained in the vessels of an inflamed part, is not one degree hotter than that which flows from the heart; besides, a few degrees of caloric could have no effect in producing the swelling. It seems to be owing to the increased quantity of blood in the part, and the effusion of a lymphy fluid into the surrounding cellular substance,—the action of the absorbents being at the same time, in all probability, interrupted.

Heat.—Boerhaave and others imagined, that this symptom depended on the friction of the red globules against the sides of the vessels; and that, in inflamed parts, the friction is greatly increased by the obstruction which exists. This, like all Boerhaave's doctrines, is too mechanical. It is difficult to determine on what cause the increased heat depends, and fortunately for humanity, it is not of much consequence; but

it is probably in part owing to a peculiar action in the nerves of the texture, partly to the increased volume of blood, by which the *quantity* of caloric is augmented, although it be not indicated by the thermometer, but perhaps principally to diminution or suppression of the natural functions of the part.

Pain.—Pain in an inflamed part is not in general continued, it is most acute during the systole of the left ventricle of the heart. It would seem, that the state of the blood influences the sensibility of the body in disease; if the mucous membrane of the bronchial tubes be extensively inflamed, the circulating blood will be principally venous, in which case little complaint is made of pain.

Terminations of Inflammation.

Inflammation, (says John Hunter,) *cæteris paribus*, always proceeds more favourably in strong than in weak constitutions; for, when there is much strength, there is little irritability. In weak constitutions, the operations of inflammation are backward, notwithstanding the part in which it is seated may possess, comparatively speaking, considerable vascular activity.

This observation, like many others by the same author, however true with regard to surgical pathology, cannot be made to apply so universally in the Practice of Physic. We more frequently see acute diseases of internal organs, gallop through a rapid course to a fatal termination, in robust, than in delicate individuals. Persons with delicate constitutions frequently sink, while labouring under internal inflammations, not because the diseased action has any peculiar tendency to terminate badly, but because the patients are too weak to bear the necessary remedies.

In another place, Mr Hunter remarks:—"It has been supposed that different species or varieties of inflammation arise from the difference of the nature of the part inflamed; but this is certainly not the case; for if it were, we should soon be made acquainted with all the different inflammations in the same person at the same time, and even in the same wound; for instance, in an amputation of a leg, &c.....It is the adhesive in them all, if the parts are brought together;

it is the suppurative, if the parts are exposed." This observation, no doubt, in some measure holds true in surgery; but it cannot be admitted in physic, as it is well known that inflammation terminates differently in different organs and tissues.

The terminations of external inflammation are commonly styled "resolution; suppuration; ulceration; and gangrene." The first is, of course, the most desirable; and, fortunately for mankind, it is the most frequent. It is evinced by a diminution of pain and swelling,—the fever gradually abates, pus does not form, nor does the structure of the part suffer permanent injury.

The second termination is that termed Suppuration. After the inflammation has existed for a certain time, which varies much in different persons, pus begins to be secreted in the cellular substance, and either collects in one cavity, as in common phlegmon, or is diffused very generally over a whole limb, as in phlegmonous erysipelas.

Ulceration is the third termination mentioned.

The most dreaded termination, and fortunately the rarest, is the entire death of the parts affected, which are then said to be mortified or sphacelated. This condition is recognized by the sudden cessation of pain; the part, from being of a bright red colour, assumes a dusky hue; it crepitates from the extravasation of air in the cellular substance, vesications arise, a very peculiar odour is perceived, the pulse sinks, and every appearance announces speedy dissolution. Death, however, does not always follow mortification of external parts; the dead are sometimes separated from the living parts, and are ultimately thrown off, the patient surviving the injury.

It is now necessary to mention shortly the effects of inflammation in the following textures: 1. Skin. 2. Mucous membranes. 3. Cellular membrane. 4. Fibrous membranes. 5. Serous membranes. 6. Inflammation of the solid viscera and glandular system.

1. Inflammation of the skin.

The effects of inflammation on this part of the body are very various: such as the formation of rashes, as in Scarlatina, Roseola, &c.; pustules, as in Small-pox, Porrigo, &c.;

vesicles, as in Chicken-pox, Herpes, &c.; papulæ, as in Measles, Lichen, &c.; scales, as in Lepra; ulceration with loss of substance; and also gangrene.

2. The effects of inflammation on mucous membranes, are, swelling and dryness; effusion of mucus, or of matter of a puriform character—a mixture of the two, appropriately termed muco-purulent; of a serous fluid, and coagulable lymph. These different products of inflammation are sometimes colourless, at others yellow, and sometimes red like currant jelly. The mucous membranes are likewise liable to softening, thickening, passive hæmorrhage, ulceration, contraction, sloughing, and tubercular formation.

Some of these effects are common to the mucous lining of the air passages, alimentary canal, and urinary passages, as for instance, copious exudation of mucus, softening, thickening, and passive hæmorrhage. Others are not so; tubercular formation, for instance, is more frequently met with in the alimentary canal. Ulceration is sometimes found in the air tubes, but more frequently in the stomach and bowels, particularly the latter, rarely in the bladder. Some parts of the mucous membrane of the same canal are more liable to inflammation and ulceration than others; for instance, the termination of the Ilium and the Colon. Inflammation is more liable to terminate in the exudation of coagulable lymph in some parts than others; it is seen most frequently in the wind-pipe and rectum, although other parts are not altogether exempt.

Considerable vascularity is not alone a certain proof of inflammation having existed in the mucous membranes before death, because it may be found only in depending parts of the canals; and congestions of this membrane may be occasioned by diseases of the heart and lungs, and by any other cause which obstructs the circulation of the blood.

3. Inflammation of the cellular membrane terminates in effusion of blood, of lymph, of serum, of pus;—in induration and gangrene. Inflammation in this tissue is generally termed phlegmonous, and although the cellular membrane is so extensive and loose in its texture, the disease tends to circumscribe itself by a sanatory process, and the effused matter to make its way to the surface of the body. Occasionally, though

rarely, the inflammation has a tendency, from the first, to spread very extensively, from peculiar circumstances which have never been satisfactorily explained. To express this condition, several new-fashioned names have been invented; the one most applicable, is, "diffuse cellular Inflammation." Sometimes the death of a small portion of the cellular membrane takes place, then the affection is called carbuncle.

4. Inflammation of fibrous membranes. This is the tissue which is generally supposed to be affected in gout and rheumatism; the chief peculiarities are said to be, that it never terminates in suppuration, ulceration, or gangrene, and the functions of the brain are rarely disturbed during the course of the disease. It is said to terminate sometimes by effusion of a gelatinous nature, or deposition of calcareous matter. This subject ought to be held as being open to future investigation; it is by no means proved that the inflammation which attends gout or rheumatism is situated in such a texture. All the phenomena and the terminations of these diseases, tend to confirm a suspicion, that it is seated in the extremities of nerves, more particularly when we reflect upon the sudden metastases. At all events, it is rather strange that so many authors should make the assertion, that inflammation of fibrous membranes *never* terminates in suppuration and ulceration. What do they call the periosteum? But this question is too intricate and extensive, and some may think, too surgical, to be investigated in this work.

5. Serous membranes in a state of health show few red vessels, and their surfaces exhale a thin serous fluid, which is just sufficient to bedew them. When inflamed, red vessels are seen during life, an effusion takes place either of serum or lymph, or of both. Sometimes the effusion is limpid, or turbid like whey: at other times it looks like pus, and occasionally it is greenish, or resembles lees of wine; often large masses of coagulable lymph are discovered glueing the parts together. Adhesions between the different viscera of the thorax and of the abdomen seem to be effected by means of intervening portions of lymph, which subsequently become organized. The quantity of the effused matter is sometimes small, amounting only to a few ounces, at others there are

several pounds. I have seen ten, twelve, and even twenty pounds in one side of the chest.

A bloody effusion is sometimes found, more particularly in the abdomen. Ecchymosis not unfrequently takes place when the inflammatory action is very violent. There can be no doubt that tubercles form *occasionally* under a sub-acute and chronic inflammation of this class of membranes, more particularly in the peritoneum, pleura *pulmonalis*,* and arachnoid coat. Emphysema also occurs in the cellular tissue immediately under the peritoneum. It has been proved by experiment, that the peritoneum, however vascular under acute inflammation during life, loses its red appearance even during the act of death. In chronic inflammation, it is sometimes found very red in colour, and thickened in texture.

Much has been written during the last few years upon inflammation of the arachnoid, by which science has certainly been benefited; but it appears to me that considerable misconception has taken place upon this subject. Although red vessels are rarely to be seen in the arachnoid, so rarely that in my whole life two undoubted instances only have presented themselves, yet no one who has paid attention to the situation of effusions of matter within the skull, will deny the existence of inflammation in that tissue. But it is comparatively rare. In my examinations (and they have not been few in number) to ascertain this point, it has not occurred to me above six times to find effusion external to the arachnoid membrane. If, on examining the abdomen, we were to find no vascularity, and no adhesions, or effusions of serum or lymph, within the cavity of the peritoneum, but were to discover the effusion on the other side of the membrane, extravasated for instance in the cellular tissue which connects the serous membrane to adjacent parts, should we be entitled to say, from any thing we yet know, that this was a consequence of peritonitis? In the cases to which reference has been made, the effusion is between the arachnoid and the pia mater, which are united by fine cellular substance —*the wrong side*, if it proceeded from diseased action in the

* Tubercles are rarely seen in the pleura costalis.

former membrane, unless it has two serous surfaces, which is not maintained by any anatomist. There is not, perhaps, in the whole body, a more vascular membrane than the pia mater, and I cannot avoid concluding that the effusions, not only on the surface of the brain, but also in the ventricles, depend more on diseased action in this, than the other membrane.

Ulceration is also to be considered as an occasional, although rare, effect of inflammation in serous membranes. It has presented itself to me three or four times only. There are three splendid specimens of this change in my museum, two of ulceration of the pleura pulmonalis and costalis, the other, of the membranes on the surface of one of the hemispheres of the brain.

Gangrene is one of the rarest results of inflammation of serous membranes, and it is to be doubted whether it ever occurs when the diseased action is confined to this tissue.

6. Inflammation of the solid viscera and glandular system. The first circumstance generally perceived is the presence of an unusual quantity of blood in the affected organ. The first change in the structure of the viscus is softening. Hardening is owing, in general, to chronic inflammation. With respect to inflammation of the solid viscera, it is to be remarked, that if the liver be excepted, the termination in the formation of abscess is rare. In the lungs, it is admitted by the best authorities to be rare; I have seen it once only in the substance of the lungs. In the brain, it is probable that the peculiar change which has been denominated *ramollissement*, and the remains of old apoplectic effusions, together with tubercular degenerations, have been often mistaken for abscesses.

Tubercles are found in the substance of various organs, as in the liver, spleen, kidneys, lungs, and brain; and there can be no doubt these are sometimes the result of inflammatory action, but no one is warranted in asserting that they are invariably so produced. I have frequently found in the lungs, and in the substance of the brain, depositions of a tubercular character, which were certainly not caused by inflammation, and which, in all probability, had been in existence for years without exciting inflammation. This statement refers to

persons who were either killed by accident, who died suddenly without any previous complaint, or who were carried off by other diseases. One of the finest preparations in my collection, is the heart of a woman, extensively and deeply tuberculated, who died in a moment without a previous complaint, and no other lesion could be discovered.

Lastly, Inflammation affecting glands, has an aptitude to terminate speedily in suppuration. Sometimes, however, they suppurate very slowly, and occasionally induration takes place.

From this rapid sketch, it may be thought that the subject has not attracted a sufficient share of my attention, and that several points have been altogether overlooked; such as the marked difference in the constitutional symptoms in inflammations affecting different tissues, and the general principles of treatment. The truth is, that the importance of these points is felt too deeply to allow me to treat of them in a general description,—a description, moreover, which ought necessarily to be very short. These subjects will be fully entered into in subsequent parts of the work.

CHAP. II.

ON FEVER.

HISTORY OF THE GENERAL DOCTRINES OF FEVER.

The importance of the subjects which are to be discussed in this chapter is very great, from the frequent occurrence and often fatal termination of this class of disorders; and it will appear still more so, when we reflect on the great extent of our dominions abroad, where, it is believed, febrile diseases carry off more than four-fifths of those who die.

If a person, after shivering, feels hot, restless, and thirsty, has a quick pulse, and complains of languor, he is said to have a fever.

Galen's notion of fever appears to have been, that an extreme degree of heat is formed in the heart, and from thence extends itself to the rest of the body. It is one of the oldest notions in medicine, that fevers are produced by a concoction of something pernicious to the system, which is expelled by a critical effort of nature, as, for instance, by frequent and copious evacuations from the bowels, free perspiration, &c. This is the view of fever taken by the humoral pathologists.

According to Boerhaave, fevers arise from the same pathological causes as inflammations,—thus ascribing them to viscidity of the blood, *error loci*, and an acrimonious state of the fluids. He conceived that the cold stage of fever was produced by the *error loci*, and all that followed was to be regarded as natural consequences. As has been mentioned in treat-

ing of inflammation, the first idea which appears to have been given to the world, of the influence of the nervous system in the production of fever, originated with Stahl, and it was improved upon by his colleague, Hoffman. They supposed that fever consisted in a tonic spasm, produced on the extremities of the nerves by a deficiency of action in the brain. They also adopted the humoral pathology; but insisted, that the sanative process was impeded by the spasm at the extremities of the nerves, thereby preventing the disease from being thrown off; and it appears to have been their opinion, that it was this resistance which produced the constitutional commotion which attends fevers.

According to Cullen, the human body is composed of certain organs, whose actions are regulated according to laws peculiar to animal life, and superintended by a mobile and conservative energy which is situated in the brain, acting wisely but necessarily for the general health, preventing mischief and repairing injuries, by a pre-established relation between the changes produced, and the motions required for the restoration of health, which actions are performed by the nerves. According to him, the muscular filaments are merely the extremities of nerves. He supposed that fever is produced by a collapse or diminution of the energy of the brain, in consequence of the influence of contagion, miasm, cold and fear acting as sedatives. This diminished energy produces a universal debility, and causes a spasm of the extreme vessels, and in this spasm the cold fit is supposed to consist. In fact, that fever is nothing more than diminished energy of the brain, and spasm of the capillaries. He conceived that the debility proves a stimulus to the circulating system, exciting increased action of the heart and arteries, which continues till it restores the energy of the brain; by removing the cause of the spasm of the extreme vessels, relaxation takes place, and health is restored by a copious sweat, or discharge of some of the other excretions. He divided the whole phenomena into three stages; *first*, the stage of diminished energy of the brain, and consequent debility; *secondly*, that of spasm of the extreme vessels; and *thirdly*, all that follows till the commencement of the sweating stage. Perceiving his doctrines

to be exceedingly weak, Cullen sought support from certain powers which are supposed to be inherent in the constitution, which enable it to resist and throw off disease, commonly called the *vis medicatrix naturæ*. But it is important that he should here speak for himself. "Upon the whole, our doctrine of fever is explicitly this:—The remote causes, are certain sedative powers applied to the nervous system, which, diminishing the energy of the brain, thereby produce a debility in the whole of the functions, and particularly in the action of the extreme vessels. Such, however, is, at the same time, the nature of the animal economy, that this debility proves an indirect stimulus to the sanguiferous system; whence, by the intervention of the cold stage, and spasm connected with it, the action of the heart and large arteries is increased, and continues so, till it has had the effect of restoring the energy of the brain, of extending this energy to the extreme vessels, of restoring their action, and thereby especially *overcoming the spasm* affecting them; upon the removal of which, the excretion of sweat, and other marks of the relaxation of excretories, take place. This doctrine will, as I suppose, serve to explain, not only the nature of fever in general, but also the various cases of it which occur."

It is remarkable that Cullen, who has insisted with so much pertinacity on spasm of the extreme vessels being a principal part of fever, should so completely have forgotten himself, as to assert that *atony*, which is the very reverse of *spasm*, is also a principal circumstance in the pathology of fever. But he shall again speak for himself. "From the whole we have now said on the subject, I think it is sufficiently probable, that the symptoms of anorexia, nausea, and vomiting, depend upon, and are a proof of, an *atony* subsisting in the extreme vessels on the surface of the body, and that this *atony*, therefore, now ascertained as a matter of fact, may be considered as a principal circumstance in the proximate cause of fever." "This atony we suppose to depend upon a diminution of the energy of the brain; and that this takes place in fevers we conclude, not only from the debility prevailing in so many functions of the body mentioned above, but particularly from symptoms which are peculiar to the brain itself."

The meaning of "spasm of the extreme vessels," is morbid contraction; that of atony of the extreme vessels, is a defect of muscular contraction. Can a morbid contraction, and a morbid relaxation, co-exist in the same vessels at the same time? This contradiction appears to me to be quite unparalleled,—it always surprised and disappointed me in the investigation of this subject; and it is astonishing that doctrines founded upon such statements should still be maintained. In the present improved state of pathology, it is almost unnecessary to enter into proof, for the purpose of shewing the error of attributing to spasm of the extreme vessels any part of the pathology of fever; but it may be mentioned that, in some fevers, copious perspiration takes place through their whole course; and, even in the cold stage of intermittent, the surface is occasionally covered with moisture. *

It appears that Cullen and others always confounded debility or actual weakness, with oppression from obstructed action. The debility which depends upon obstructed action is very different from that produced by starvation, a protracted disease, or great loss of blood, &c.; it is mere oppression, occasioned by the loss of balance between the arterial and venous systems: and the proof consists in the well known fact, that upon the restoration of that balance, the overpowering sensations of weakness vanish, even when brought about by blood-letting, which is a remedy directly debilitating. If debility formed such a regular and indispensable part of fever, as the Cullenians assert, three circumstances ought to follow as necessary consequences. 1*st*, Weakness, produced in so many different ways, should invariably excite fever. 2*d*, Once a fever is lighted up in the system, it ought to be impossible to extinguish it, and particularly by any antiphlogistic means; and, 3*d*, The longer such an action continues, the greater will be the debility, and therefore the febrile symptoms ought to become more and more intractable.

The term "diminished energy of the brain," being a prin-

* I have written more fully upon this subject, to shew the great absurdity of the doctrines of Cullen, in a paper in the Medico-Chirurgical Review for January 1828.

cipal part of the foundation of Cullen's doctrines, cannot be allowed to pass without notice. It is one of those vague terms too often used by him to express a great deal more than we actually know, but which in reality explains nothing. It is one of those expressions which satisfies the youthful mind, without affording instruction or exciting inquiry. What is the natural energy of the brain? How is it propagated? It would be very satisfactory if the living advocates of this system would inform us, at what period of the disease the energy of the brain exists in its most perfect state, and greatest strength. Is it at the period of attack, or *at its termination?* It appears to me to be most unphilosophical to treat of diminished energy of the brain as a principal part of any disease, because it has no precise meaning. It can be of no use in explaining the nature and seat of fever, and of still less service in directing the plan of treatment.

Cullen too hastily rejected the humoral pathology, and seems unfortunately to have almost entirely disregarded the effects produced by outward causes, and inward irritations, in producing irregular determinations of blood, and local engorgements, which, I shall hereafter attempt to shew, are the great agents in exciting diseases, and especially fevers. It may be noticed in this place, that Dr Mason Good, in his large and laborious work, advocates the truth of the chief parts of the Cullenian doctrines.

According to Dr Brown, man is made of organized materials, endowed with a principle of excitability or predisposition to excitement, by means of a great variety of stimuli, some of which are constantly acting upon the machine. This excitability, in point of fact, is nothing more than the nervous energy of Dr Cullen; it is the principle of life, or life itself. It is, according to Brown, constantly varying in its accumulation and exhaustion; yet it differs somewhat from the nervous energy of Cullen, which is influenced by something unconnected with the matter of organization, and which he terms "*vis medicatrix naturæ*,"—whereas Brown's excitability is passively exposed to the effects of such stimuli as it may chance to meet with, and yields to their influence. He divided all diseases into two classes: the first, caused by ac-

cumulated excitability, and marked by direct debility; to this class he gave the name of *Sthenic*. The second, produced by exhausted excitability, and marked by indirect debility; this class he termed *Asthenic*. And his treatment is as simple as the arrangement, viz. in the first case, to reduce the excitability by antiphlogistic means; and in the second, to increase the excitability by an opposite treatment. It can scarcely be believed, that an author who acquired so much reputation, could have been guilty of publishing such nonsense on a point of such vital importance, as the following:—"In order both to prevent and cure diseases, we must always use the indication proposed, and stimulate or debilitate; never wait or trust to the supposed powers of nature, which have no real existence."—*Elements of Physic, vol.* I. *p.* 81. It is surprising, considering that his works abound with absurdities equally glaring, that Dr Brown should have made any converts; and it is not very creditable to the age in which he lived, that it should be told he had numerous followers,—but they soon began to fall off; and it is curious, that in proportion as they declined in number at home, they increased abroad, and are at this very moment, with some modifications, in considerable force in Italy, notwithstanding the exposure of the fallacies of the system made by Rasori.

Dr Darwin improved the Brunonian doctrines, in so far as he makes the brain the common fountain, from which every other organ is supplied with sensorial fluid. He regards the sensorial fluid as a mere secretion, capable of being exhausted in four different ways, through the agency of four separate faculties which he ascribes to it.

1*st*, The faculty of *Irritability*, exhausted by external stimuli, affecting simple irritable fibres.

2*d*, Of *Sensibility*, exhausted by stimuli affecting the fibres of the organs of sense.

3*d*, Of *Voluntarity*, exhausted by stimuli affecting the fibres of those organs which act in obedience to the will.

4*th*, and lastly, of *Associability*, exhausted by stimuli affecting organs associated in their actions by sympathy or long habit.

By each of these means, Darwin supposes the sensorial

power becomes evacuated, as by food and rest it becomes replenished, often indeed with an accumulation or surplus stock of power. He therefore considers the occasional causes of fever, (whatever they may be), as inducing a torpor of the extreme arteries, and the subsequent heat, as an inordinate action of the sensorial power hereby accumulated to excess.

This subject might be pursued much farther, but a more minute detail does not consist with the plan of this work, particularly as the individuals whose names have been mentioned have bewildered themselves with theories, have substituted mere conjectures for facts to which they have given appellations, have replaced one mystery by adding another quite as inexplicable, and seem to have considered the subject without reference to morbid dissection, or to the habits and modes of living in different societies and climates.

I still have to mention the doctrines of more modern pathologists, which are alleged to be founded on morbid dissection. Some of these contend that fever (or as they term it, the proximate cause of fever) depends upon inflammation of a particular organ. Thus it has been attributed to inflammation of the brain—of the liver—of the digestive organs generally—of the mucous membrane of the stomach and intestines particularly —and of the arteries and veins.

It is necessary to caution young practitioners, and more particularly those commencing the study of medicine, against implicitly receiving the arbitrary doctrines of fever which divide the profession in the present day, viz. that fever is invariably produced by inflammation of one viscus, or set of viscera.

Dr Clutterbuck, a Physician of reputation in London, has most ingeniously attempted to prove, that fever depends upon some degree of inflammation of the brain. In reviewing the merits of his system, it must be kept in view, that he practises in the greatest commercial City in the Universe, among a people whose minds, generally speaking, are more actively employed than their bodies, who are exposed to intense anxieties, occasioned by extensive speculations and reverses of fortune, who are either in a state of considerable mental excitement or depression. If to these considerations we add the effects of

heavy meals and sedentary habits, impeding the functions of the stomach and bowels, it will be seen, that there may be considerable foundation for the opinions this gentleman has been led to advance. But I object to the arbitrary application of his doctrines.

Broussais, to whom the profession stands greatly indebted, and whose merits, like those of many others, have been more justly estimated abroad than at home, asserts that all fevers may be referred to gastro-enteritis, simple or complicated. In France it is no wonder that Broussais should so frequently find the mucous membrane of the stomach and intestines altered both in appearance and structure, if the habits and modes of living of the people are recollected. The stewed meats, salads, oils and sweets, consumed by Frenchmen among the higher ranks, together with the hard beer and acid wines which they drink, and the unwholesome food eaten by the lower ranks, all tend to produce irritation in the digestive organs. Sooner or later, these irritating matters produce increased vascularity, which must frequently terminate in inflammation and ulceration. It is easy, therefore, to account for the doctrines of Broussais, and for the tone in which he supports them; and while I allow him every merit and commendation which is so justly his due, I cannot help objecting to the arbitrary manner in which he wishes to apply them.

There are other individuals of the present day, who assert that fevers have never any connexion with inflammation, except in as much as they occasionally excite it in their progress; and in alluding to the appearances so frequently found on dissection, they triumphantly but erroneously allege, that such appearances are the effect, and not the cause of the disease. Change of structure is certainly only a consequence of previous disordered action, but in fever it is not always difficult to trace the progress of the local disease, from the beginning of the disordered action till the structure of the part is injured. There are many persons who imagine that inflammation cannot exist in any organ or tissue of the body, in any degree, without a strong and quick pulse, thirst, restlessness, and considerable pain. Fatal error!

The war of opinion in France, respecting the pathology of

fever, is at present too great to entitle us to expect candour from all the combatants. Much talent is already in the field, and when the stage of excitement is over, the science of Medicine will probably be found to have gained very considerably. Some are ready to assert the universal truth of the *new doctrines* at the point of the sword, while others as strenuously, and apparently as sincerely, deny them. New advocates are daily coming forward on each side; and while we may express our admiration of the zeal, ability, and assiduity, displayed by so many individuals, still I cannot avoid stating my conviction, that their services would be more useful to suffering humanity, if many of the authors thought more, and wrote less. From this reflection, I would beg to exclude the truly valuable works of Broussais, Andral, Laennec, Boisseau, Bailly, and many others; but even with respect to these, if that of M. Bailly is excepted, it is melancholy to reflect upon the little practical benefit they have themselves derived from pathological investigations. They have filled large volumes with cases and dissections, but their practice is too *expectant* on most occasions, and generally weak and vacillating. Having already expressed myself candidly respecting the errors of authors of our own country, I may be permitted to do the same with respect to those of the French School; and I must further add an expression of surprise at the little acquaintance with British medical literature, which even their best writers display. Frequent opportunities will occur, in the course of this work, to quote with benefit to my readers, many important facts from French works; but in this doctrinal history, it would be of little service in general, and occasionally would make "darkness visible."

It is now time that I should state the views which I have been led to form on this important subject.

First, Fevers may depend on inflammation of an acute, but more frequently of a sub-acute nature, of some organ or tissue of the body. If the inflammation be acute, the febrile symptoms will be correspondingly severe; but if sub-acute, they will assume a slighter form. It ought to be mentioned in this place, that the symptoms and terminations are variously modified by the organ or tissue inflamed.

Secondly, Fevers very often depend upon mere functional derangement of some organ, having as yet no connexion with inflammation; and here again we have a modification of the symptoms and terminations according to the organ principally diseased.

Thirdly, Fevers sometimes depend on the mere loss of balance in the circulation, producing local congestions; fevers arising from these last two causes are generally called *idiopathic*.

After having watched the progress and termination of fevers in various climates, I have been led to conclude, that the nature and seat of fever is pretty much the same in all constitutions, in all climates, and under all circumstances; the leading difference being in intensity, and the rapidity with which some run through their course; being sometimes connected with inflammation, sometimes not; at other times depending on functional disorder of some important organ of the body, and also upon lost balance of the circulation, by which means some local accumulation of blood takes place.

Some have supposed, from the tenor of the papers which were formerly published by me, that I deny the influence of the nervous system in the production of fever; but this is far from being the case. It would as soon occur to me to question the laws of gravitation. I have always maintained the existence of a strict connexion between the vascular and nervous systems, in producing and keeping up febrile and inflammatory diseases.

There can scarcely be a doubt, that a disordered state of the functions of the brain, and other parts of the nervous system, occasionally gives rise to febrile action. It is impossible to deny to the brain, as an organ, that it may be disordered, like other viscera, in function, as well as diseased in structure. My ideas of fever may be summed up in the words of Dr Fordyce, one of the best and most original writers upon the subject. "A fever," says he, "is a disease that affects the whole system; it affects the head, the trunk of the body, and the extremities; it affects the circulation, the absorption, and the nervous system; it affects the skin, the muscular fibres, and the membranes; it affects the body, and affects likewise the mind. It is, therefore, a disease of the whole system in every

kind of sense. *It does not, however, affect the various parts of the system uniformly and equally; but, on the contrary, sometimes one part is much affected in proportion to the affection of another part.*"—Dissertation on Simple Fever, Part I. p. 27.

It appears to me, that certain general views closely touching this question are admitted by all writers whose opinions are of any value, although the same facts have been called by different names, and have led observers to draw opposite conclusions.

1*st*, That the functions of almost all organs are embarrassed in fever from the very beginning, and often for days before the sense of coldness is felt by the affected person.

2*d*, That the blood leaves the surface of the body, and accumulates in internal organs, and that, unless they are overwhelmed, the system makes an effort to relieve herself, and certain combined phenomena take place, which are designated by the terms "Re-action, Fever." A question has arisen to determine by what means this is effected. There can be no doubt that it is owing to the principles of life. There are two circumstances, in following which investigators have bewildered themselves; one is, the vain attempt to ascertain the first link in the chain of diseased action; the other is, the still more hopeless endeavour to discover the principle of life, which perhaps no man will ever be able to unravel.

3*d*, That inflammation of all parts of the body will give rise to fever.

4*th*, That inflammation may supervene during fever, without being the primary cause of the febrile commotion.

5*th*, That the nervous system is involved as well as the vascular; and,

6*th*, It follows as a consequence, if all these things be true, that the blood itself must be in a diseased condition.

This outline of my opinions must suffice at present,—it will be best filled up when treating of the pathology of individual fevers,—when an attempt will be made to account for the discrepant histories which have been given of fevers, and for the varieties of treatment recommended by different authors.

Division of Fevers.

Fevers have been divided into various kinds. Dr Mason Good has four orders, thirteen genera, and each genus has several species. This is a very erroneous plan in writing as well as teaching; for every individual case has some peculiarity, so that this very learned author might with as much propriety have made many millions of species.

It was the opinion of the celebrated Dr Rush, that it is "*not more improper to say that men are of different species, because some are tall, and others short, or because some are long, and others short-lived, than that fevers are of different species, because they vary in their symptoms and duration.*"

Cullen has divided fevers into Intermittent, Remittent, and Continued, and this last is subdivided into Synocha, Typhus, and Synochus.

It is my intention to reject the term "*Idiopathic*," * as applied to fevers, which I consider a most unhappy term, being one respecting which no medical man with whom I am acquainted can give a satisfactory definition. It seems to be a disease beyond the pale of pathology, having neither nature nor seat. It is defined by some to be a fever without a cause. Fever is alleged to be a certain combination of symptoms, but it cannot be said that this is the disease. The symptoms are to be regarded as evidences of a diseased condition of some part or parts of the system; whereas, those who speak of idiopathic fever, will be found very frequently to do so, either from habit, or from a dislike to change terms, they themselves having a particular meaning for it. But the schoolmen who are in the habit of using this term, I verily believe, do so from an erroneous impression that the symptoms are the disease, and it is understood that some of them even go the absurd length of treating of Idiopathic Hectic!

The terms Adynamic and Ataxic have been also avoided in this work, because there seems to be no good practical reason for their employment.

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* The fevers said to be "*Idiopathic,*" are "Intermittent, Continued, and Exanthematous."

None of the arrangements which have been hitherto laid before the profession, exactly meet my views; and in so far as I have been able to observe the phenomena of fever, I believe they may be advantageously arranged under the following heads:

1*st*, Intermittent Fever.

2*d*, Remittent or Yellow Fever: Infantile Remittent.

3*d*, Continued Fever, subdivided into four orders, viz.

Fever from functional derangement.

——— from inflammation.

——— from congestion.

A mixed form of fever between these three last, but in which congestion predominates, commonly denominated Typhus or Synochus.

4*th*, Hectic fever.

5*th*, Fevers attended with eruptions, subdivided as follows:

Scarlet fever.

Measles.

Small-pox.

——————— modified.

Chicken-pox.

Miliary fever.

Roseola.

Urticaria.

6*th*, The Plague.

General description of the phenomena of Fevers.

The following are Cullen's definitions of febrile diseases, and of fever:

First, of Pyrexia.

"After shivering, succeed a quick pulse, increased heat, with interruption and disorder of several functions, diminution of strength, particularly of the joints."

Secondly, of Fever.

"After languor, lassitude, and other signs of debility, pyrexia, without any primary local affection."

There are the strongest objections to all medical definitions. The following may be urged against the two above quoted; they are *symptomatical* definitions, and it is well known by

physicians of experience that the symptoms vary much according to constitution, climate, and habits of living. They vary even in different individuals belonging to the same family, and during the same epidemic. The symptoms develope themselves in various degrees; one symptom, when exceedingly severe, frequently conceals or disguises the others. A definition, to be useful either to the student or the young practitioner, should embrace such phenomena as are peculiar to that particular disease, and which never attend any other,—phenomena which may be therefore said to be pathognomonic of the affection. As has been already stated, there is no case of fever, or indeed of any other disease, which has not some peculiarity that distinguishes it from another of the same family; in truth, the symptoms of diseases have a very wide range of character. A definition, giving a sketch, not of the symptoms, but of the *nature and seat of the disease*, would be a most useful introduction to the practice of physic; but pathology, unfortunately, is not yet sufficiently advanced to enable me to adopt such a plan in this work.

It may be asked why Cullen, in his definition of fever, has taken no notice of pain in the head and in the loins, delirium, and coma, of oppression at the præcordia, of nausea, want of appetite, thirst, and the state of the tongue? The reason appears to me to be evident; the mention of these phenomena would have led to the suspicion of *local affection*, which was contrary to his own dogmas.

"Fever," says Dr Fordyce, Part 1st, p. 7, "of all other diseases, is that one in which a pathognomonic symptom is least to be depended upon; that is to say, an appearance which does not take place when there is no fever, or a fever does not take place when there is no such appearance."

Febrile diseases sometimes commence without any rigor, and go through their whole course without any unusual heat of skin, quickness of pulse, or thirst. The rigor is not always followed by increased heat. Languor, lassitude, and other signs of debility, are symptoms common to almost all diseases, and therefore should not be ascribed to fevers in particular.

It is impossible to give a good general account of the phenomena of fevers, because, in addition to the objections urged

above, they vary every day in the course of the disease. The symptoms which appear in the accession of fever, differ from those which manifest themselves in its progress; and these again from those which are observed in the decline and termination. These differences have given rise to a division of every fever into stages:

1. That of accession.
2. ——— increase.
3. ——— declension.
4. ——— collapse.

These stages have been differently named; the first is sometimes called the stage of oppression and depression; the second, that of re-action; the symptoms occurring in the third and fourth stages, have too frequently been called typhoid.

The symptoms vary also according to the organs chiefly affected. In some cases there are decided cerebral symptoms, from the very beginning, indicated by headache, intolerance of light and sound, *tinnitus aurium* and delirium, or stupor with low muttering delirium, and sometimes *coma*, &c. In other cases the viscera of the thorax are principally affected, indicated by dyspnœa, cough, expectoration, and tightness in the chest, &c. In a third set of cases, some of the viscera of the abdomen are implicated, announced by nausea or vomiting, uneasiness increased on pressure, obstinate constipation or diarrhœa, a morbid state of the alvine evacuations, discovered both by their appearance and odour; a tympanitic state of the abdomen, and peculiar appearances of the tongue. Occasionally in the course of the fever there are evidences of acute or sub-acute action in all the three great cavities, and this is what occurs in the worst forms of yellow and malignant fevers.

In fever the functions of every organ are more or less disturbed, so that there is the best proof of universal disorder, and the appearances so frequently seen on dissection warrant this inference. True it is that we now and then, on examining the body of an individual, find no very decided morbid appearance.* This is by no means peculiar to the prac-

* This is seldom the case, however. The only places in which the physical

tice of physic; for, in that of surgery, people sometimes die after capital operations, where there has been no loss of blood, and no organic lesion found upon dissection, to explain the cause of death. They are said to die from the shock, by which term I understand that the principal functions of the body become suddenly impeded to such a degree that life can no longer be carried on. In the same way, in fevers, individuals die before any alteration of structure has taken place; from peculiarity of constitution, they cannot stand the shock produced by the embarrassment of so many organs in the performance of their functions; and farther, many individuals cannot bear the remedies which have been thought necessary for the subduction of the disease.

Some cases of fever commence with shivering, quickly followed by increase of heat and other symptoms of pyrexia, and terminate in a few hours, after considerable suffering, by copious perspiration; this is the simplest form of fever, and is termed "*Ephemeral;*" but when there is a regular succession of paroxysms, it is called "*Intermittent.*"

Other cases commence in the same manner, followed by heat of skin, &c.; continue for a day or two, when the symptoms decline; and there is sometimes a state of complete apyrexia, which continues only for a short time, when they recur with perhaps increased violence. This kind of fever has obtained the name of "*Remittent.*" When it occurs in infancy and childhood, it is called "*Infantile Remittent.*" When the skin becomes yellow, the term "*Yellow Fever*" has been applied.

Another kind of fever continues for days, or weeks, without intermission, and is therefore called "*Continued Fever.*" It has several varieties, of which the following are brief sketches.

First variety.—An individual feels impaired appetite; his bowels out of order; his urine scanty and high coloured; he

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traces of disease can be investigated with due care and deliberation, are public hospitals, and the indifference which generally prevails is shameful. If a physician has the ability, he is too much occupied, and some, unfortunately for science, have neither the ability nor inclination.

passes restless nights, and at length is sensible of increased heat of skin; towards morning he generally falls into a gentle perspiration, and enjoys a few hours sleep, from which he rises somewhat refreshed; he finds his tongue loaded, his breath more or less fetid; he feels unwell, but still is able to pursue his ordinary affairs. In the course of the day he is sensible of frequent slight chills, and flushes of heat; he becomes rather languid, has a little headache, but hopes to be better after dinner; he returns home, and although he has no appetite, forces himself to eat and drink, and passes rather a worse night. This goes on for several days, till at last he shivers pretty severely, and feels so much oppressed that he is compelled to confine himself to bed. Then for the first time medical advice is sought: the physician can find no symptom which can be attributed to inflammation; there is considerable restlessness, but no great degree of suffering, except that which proceeds from a sense of oppression in the præcordial region, fulness in the stomach and bowels, and pain in the loins; the appetite is gone, and the individual loathes food of all kinds, but has considerable thirst. The mental faculties are commonly quite sound, but there is perhaps slight alienation during the night.

Abstinence from solid food, and a steady perseverance in gentle laxative medicines, soon produce an amendment. This is the form which I have denominated "Fever from functional derangement."

Second variety.—A person is sometimes seized with a shivering more or less severe, followed by severe pain in the head, chest, or abdomen; accompanied by considerable heat, thirst, full pulse, and every symptom which announces a subacute attack of inflammation of some structure, within one or other of the three great cavities; and this is the form all writers term a pure inflammatory fever. But when the inflammation of any part runs high, it is then said to be an inflammation of a particular tissue or organ. It must be recollected, however, that inflammation of internal organs may go on to a fatal termination without strongly marked symptoms.

Third variety.—Another individual, without being sensible

of any previous complaint, may be suddenly seized with shivering; the sense of coldness soon becomes intolerable; he is unable to support himself in a standing or even in a sitting posture; his intellectual faculties are soon observed to be impaired, his features shrink, a deadly coldness gradually spreads over the whole surface of the body, his pulse sinks, he makes little complaint, and dies without the appearance of any of the symptoms usually termed febrile. This is a form of disease which is certainly not very frequently met with in this country, but which is often seen in warm climates, and it occasionally attacks women in child-bed. This is the purest example which can be given of what has been termed congestive fever,* but it is not that form of it which we most frequently meet with in these latitudes, where it generally developes itself in the following manner:—A person, after feeling more or less unwell for some days, or perhaps for some weeks, experiences chilly sensations, alternating with unusual warmth; he is disposed to sit over the fire; feels weak, and after being in this situation for some time longer with changes from heat to cold, the cold predominates to his sensation, while another person will pronounce him to be hot; but upon careful examination, his extremities, more particularly the hands and feet, will be found cold; he makes little complaint, and is often thought to be asleep, when in fact he is comatose. Occasionally, however, the head is quite free, he suffers from slight dyspnœa, is unable to take a full inspiration, but has no pain. The tongue is generally moist, sometimes loaded, white and shrunk. The pulse is soft, sometimes quick, at others not above the natural standard. Even when to all appearance he is in a complete state of coma, he can be roused, when his expression of countenance will be vacant, and appear as if he were in a state of intoxication. If questioned as to what he complains of, he will answer, "of nothing," or he will move his hand towards his head, or place it on his breast signifying some uneasiness, but he quickly falls into a comatose state again.

* This is the form of fever which occurs in Rome and other places where Intermittents prevail, and is termed *fièvres intermittentes pernicieuses*, the pathological elucidation of which has been so fully pointed out by M. Bailly.

Fourth variety.—The next form of fever of which it is my duty to give a sketch, is that in which the patient is seized much in the same way as in the last described variety. He complains, however, from the first, of pain in his head, chest or abdomen; has frequent attacks of chilliness followed by heat; with symptoms characteristic of diseased action in the head, thorax, or abdomen. But this state is quickly succeeded by more or less insensibility, slight delirium, rapid weak pulse; the surface of the trunk of the body feels hot, while the extremities are rather cold; the delirium which manifested itself only during the night, now becomes permanent; it is not of the furious kind, but that which is appropriately termed "low muttering delirium;" the tongue, which was moist for the first few days, is now observed to be dry and glazed, and tremulous; he passes his urine and fæces in bed; is always found upon his back, and however often he may be moved, will soon shrink down again towards the foot of the bed, which is a sign of complete prostration of strength, and perfect helplessness,—a bad symptom in any disease. In this state it is impossible to rouse the patient, and it may be evident that he is also blind; the pulse being quick, and so weak as scarcely to be felt, while the action of the heart may yet be very strong, and a considerable pulsation felt in the carotids or abdominal aorta. Recovery is rare when the symptoms are so very severe, although the fatal period may be protracted to the end of the third week. Occasionally in this form of disease, instead of the cold predominating, there is considerable heat, and the symptoms are pretty sharp, but at the termination of a few days, they become such as have been described above. This is the disease generally called "*Typhus.*" But when the symptoms run very high at first, and subsequently become low, then it is usually called "*Synochus.*" And this is precisely the form of disease which will be more particularly described hereafter, under the denomination of "*a mixed form of fever,*" from the want of a better appellation. The term Typhus is objectionable, because it is sometimes used to denote a malignant, or a putrid fever; at others it is employed to signify a nervous fever. The term Synochus is also objectionable, for this reason, that it is stated to be of an inflam-

matory nature, but there is a supposed union with a typhoid state of the system, which, although present, remains latent in the first stages, and subsequently developes itself; and we are told that the appropriate remedies for inflammation are not to be employed, from a dread of typhus, which must inevitably follow.

The term Hectic fever, is used only to signify febrile symptoms consequent to some previous disease, and restricted to symptoms which are produced by the formation of pus in some organ or tissue; in fact, whatever doubts have been entertained with respect to the nature of all other fevers, this is almost the only one which is universally allowed to be symptomatic.

It is considered unnecessary to offer any general explanation in this part of the work respecting the fifth class, viz. Fevers attended with eruptions; or the sixth, the Plague.

Causes of Fever.

The causes of fever are marsh miasm, contagion from human effluvia, and epidemic influence. These causes, together with cold, fear, &c. are called in medical language remote; but I shall continue to employ the terms common and specific. Cullen resolves all remote causes into sedative, in order to support his dogma of debility; he could not consistently allow a cause of a stimulating and exciting nature. Marsh miasm, he supposes capable of producing intermittents and remittents only, and he restricts the term contagion to human effluvia, capable of producing continued fevers only. He considers the common causes scarcely capable of producing fevers. Some authors assert that there is only one species of infectious matter peculiar to all febrile diseases.

No one who has attended to this subject, can deny the influence of contagion, and the air of marshes, on the human body; but I conceive that too much has been hitherto attributed to them, too little to the previous state of the constitution, and also by far too little to the common causes of fever, and to internal irritations. A weighty argument in favour of contagion, is sometimes drawn from the well known fact, of fevers spreading not only from one to another in a family, but also in the same

neighbourhood; but the similar circumstances under which the inhabitants are placed should not be forgotten. The anxieties, the hopes and fears, which alternately affect individuals attending others whom they love, the exposure to cold and fatigue, the night-watching and want of rest, the irregularity in taking nourishment, and the neglected state of the bowels, all tending to produce loss of balance in the circulation, and local disease, will go far to account for a number of individuals in the same neighbourhood, and more particularly in the same family, being affected one after another. Neither should it be forgotten, that all these individuals residing in the same locality, and living in a similar manner, may have been exposed at the same period with the person first affected, to the miasm or epidemic influence, or some of the common causes which produce fever. Why one individual should be sooner attacked than another, and have the disease perhaps more severely, it is difficult to determine. An interesting question here arises,—What length of time does the contagion remain latent in the body, before it shows its effects? This is an intricate question, and one which has never been satisfactorily investigated. Some say it can be for a few days or weeks only, while others state with great confidence, that it may remain many months. Dr Gregory used to assert, that contagion might lie frozen for any length of time, and resume its virulence upon being thawed. There are other interesting facts, which are not sufficiently attended to in considering this subject. It is my belief, that contagion will not produce fever, applied a thousand times to a person, if he be in a good state of body and mind. Dr Gregory stated, that he must have been exposed to the influence of contagion some 20 or 30,000 times without affecting him once. The contagion of fever, to produce its effects, must be applied to a person ill fed and clothed, or to one whose stomach and bowels are out of order, or who is labouring under the effects of some mental depression.

From the evidence before us in the records of medicine, it appears that individuals residing in low marshy countries, are peculiarly liable to fever which has been termed intermittent. The air of a marsh, however, does not differ in its chemical properties from that of the most salubrious situations; it sup-

ports combustion, and therefore cannot, as some have supposed, be deprived of much of its oxigen. If its constitution were changed, it would affect all who breathed it, blacks as well as whites; but this is not the fact, for there are very many people, who live in the centre of marshes for years, without being attacked by intermittent fever. I have myself had many attacks of this disease during a residence in a marshy district, therefore it has been in my power to investigate this subject minutely, not only with regard to the phenomena of the disease and its causes, but also the sensations produced during the paroxysms. From personal observation thus acquired, the first circumstances which attracted my attention, were, that men were more liable to the disease than females,—whites than blacks,—the dissolute than sober steady-living men; and that agues were most prevalent at new and full moon.

Women are less liable to the disease than men, because they are less exposed to vicissitudes of weather, their habits are not so dissipated, and they keep more regular hours. Blacks born in the West Indies, are less liable to this disease than whites, partly, no doubt, from the nature of their constitutions, but principally because they have neither the means nor the liberty to indulge themselves like their masters. But I am convinced that difference of constitution, enabling blacks to resist the causes of fever better, has been very much overrated, and that diseases which destroy so many Europeans, are owing more to licentiousness than to the effects of climate. The dissolute are more liable to this disease than others, because they often expose themselves recklessly during the night, when the system is in a state of collapse; and the disturbance which is created and kept up in the functions of important organs, by constant excesses, must not be lost sight of.

Moisture alone has a great effect in producing disease, and its influence is speedily observed on the mind as well as the body. But moisture alone will not produce intermittent fever, the influence of excessive heat must be superadded, and then there is a rapid evaporation from the earth's surface. It is this evaporation, I imagine, which is productive of so much mischief to European constitutions in warm climates, particularly where there is any tendency to collapse. Agues are not

commonly prevalent during the rainy season, when the surface of the earth is more or less covered with water; but they become so after the dry season sets in, when it is alleged "the sun acts upon the soil itself, producing deep rents, whence it is supposed the miasm emanates." This, however, can be more satisfactorily accounted for in a different manner. During the rainy season, white people take greater care of themselves, and are less exposed; the sun is obscured from the eye by dense humid clouds; there is consequently a pretty constant deposition of moisture, but little or no evaporation. The sun's influence becomes very great when the rainy season ceases, and the extent to which evaporation goes on, exceeds all belief. It is then that severe fevers and dysenteries generally prevail.

Dr Fergusson has observed, that "the same rains which made a deep marshy country perfectly healthy, by deluging a well-cleared one, where there was any considerable depth of soil, speedily converted it, *under the drying process of a vertical sun, into a hot-bed of disease.*

With regard to the apparent influence of the planetary system in intermittents, it must be observed, that in localities where this disease generally prevails, the surface of the earth is scarcely above the level of the sea at high tides; so much so, that to prevent inundations, dykes are thrown up. At new and full moon the tides rise, the marshes become covered with water, the drains become charged, and the daily effects of evaporation produce the disease. I am indeed aware, that in the interior of Ceylon, and above the Ghauts in the peninsula of India, where the tides cannot have the slightest influence, agues are very prevalent, both among natives and Europeans at certain periods of the moon's age. I am informed by Mr Marshall,* that in the interior of Ceylon, he has seen the mercury in the thermometer rise from 60° to 90° in the shade: and in the sun's rays even to 142°. The difference of temperature to which the troops were exposed from 5 o'clock A.M. till mid-day, amounted sometimes to 82 degrees.

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* The well-known author of Notes on the Medical Topography of Ceylon—Hints to Young Medical Officers, &c. &c.

Some have attempted to account for the occurrence of remittent fevers by the effects of excessive heat; but I believe that heat alone, unless the temperature be very high indeed, will not produce fever in any climate, till moisture be superadded, or sudden changes of weather take place, when the thermometer will suddenly fall twenty or thirty degrees, as I have myself observed in unhealthy seasons.

It will be seen that it is not my intention to deny the existence of some invisible substance suspended in or mixed with the air of the atmosphere, and which may produce intermittent fever.* A fact may be mentioned on this side of the question, which must carry considerable weight with it. It has occurred to me to see a good deal of intermittent fever in situations far remote from marshes, but in every one instance the individuals had been at some period of their lives in marshy districts; yet it is certainly very strange that some of them never had a paroxysm during the period of their residence in these places, and not till months, and in some instances years, had elapsed.

Some contagious diseases are communicated from person to person, by breathing the air in the apartment where the sick person is confined; others require that actual contact should take place; and some diseases are communicated in either way. In the plague, it would appear that actual contact with the affected individual, or with his apparel, is necessary; whereas, in small-pox, the contagion may be received merely by coming into the same room, and it is also conveyed by inoculation. Contagious diseases spread slowly from one person to another, and from house to house, and may often be concentrated within a circle, where it will attack all, or almost all, who are exposed to the contagion, particularly those who have not had the disease before.

When we say a disease is epidemic, it is understood that we mean one which is produced by a certain state or condition of the atmosphere at present unknown, and which has baffled the exertions of every one who has entered upon its investi-

* Some writers go the extraordinary length of speaking of the specific gravity of Marsh Miasm.

gation. The term implies that a great number of people are suddenly seized at the same period. An epidemic disease, after continuing for a longer or a shorter period, suddenly ceases, at a time perhaps when the greatest number of patients are affected. These are facts which appear to have confounded those who assert that yellow and other fevers are invariably contagious.

It does not appear that intermittent fever is ever contagious: but I am of opinion the yellow fever, and that which has been termed Typhus in this country, are so, under particular circumstances, and sometimes in a very high degree. Observation and experience have induced me to conclude, however, that this cause of fever has been very much overrated.

In the year 1793, Dr Chisholm made an attempt to prove, that the fever which then prevailed in the West Indies was highly contagious, and imported from Bulam, on the coast of Africa, by a ship called the Hankey. Similar attempts have since been made in many places in America, as well as in Europe, to account for the severe fevers which have prevailed from time to time. The favourers of importation have invariably failed in proving the disease to have originated in that manner, and have not been able to show that it had not a local origin. In the town and Garrison of Gibraltar, there are always cases of fever, particularly in sultry weather; many are severe, attended by yellowness of the surface of the body, and vomiting of a dark-coloured matter, commonly called Black Vomit. These cases are considered by all candid observers to be the ordinary remittent fever, common to this and other places under similar influences. The majority of the cases are found to occur in the lowest, worst ventilated, and filthiest parts of the locality. But in 1804–1810–1813–1814, and 1828, Gibraltar was visited by a fever more severe in its symptoms, more fatal in its results, and attacking a larger proportion of the troops, as well as the inhabitants. On each of these occasions attempts were made to prove its importation, and that it afterwards spread by contagion, and had no trace of local origin. Considerable doubts were, however, entertained upon this subject; but in 1814, the supporters of importation and contagion failed so completely in shewing the

foreign origin of the fever which then prevailed, that many sensible people were led to doubt, and others to deny, the truth of such views. I wish at present to confine my observations to the source of the fever which prevailed in the town and garrison of Gibraltar in 1828.

A host of medical men, with the late lamented Dr Hennen at their head, maintain that the disease was of local origin, for which there were abundant sources, and that there is no proof of its having been imported.

One or two others, with Sir William Pym, Superintendant-General of Quarantine, as their leader, not only insist that it was not of local origin, but that it was imported in a particular ship called the Dygden, which sailed from Havannah on the 12th May 1828, and arrived at Gibraltar on the 28th June.

I have carefully perused all the evidence produced through the medium of the Medical periodical press, and published by the following gentlemen :—Mr Fraser, late Surgeon to the Civil Hospital at Gibraltar; Dr Smyth, Surgeon 23d Regiment; Mr Amiel, Surgeon 12th Regiment; Mr Wilson, late of the Medical Staff, who I believe retired from the service, partly from disgust, and partly from the persecution to which he was subjected, and would not submit; Dr Barry, Physician to the Forces: Also, Sir William Pym's replies to queries put to him by the Royal Medico-Chirurgical Society of Cadiz, —together with the opinions of the Board of Commissioners, and certain documentary evidence respecting the annual occurrence of fevers of a similar character at Gibraltar, as extracted from the books of the Civil Hospital, and authenticated by the signatures of a number of highly respectable gentlemen.

After the most careful perusal of these productions, duly considering all the facts adduced in evidence by all parties, my deliberate opinions are as follow :

1*st*, That the fever of 1828 was of local origin, and for which there were unfortunately abundant sources in the bad state of the drains, the crowded condition of the poorer inhabitants, and the exceedingly filthy and badly ventilated state of their abodes.

2*d*, That there is not a tittle of evidence to show that the

disease was first propagated by communication with the Swedish ship Dygden. Indeed, it does not appear that there was any cause to suspect this ship of bringing the seeds of the disease from Havannah. In the first place, we see from her clean bill of health, signed by the authorities there, that "this city and its neighbouring towns are free from all plague or contagious epidemic disease; as likewise the said Captain, with the fifteen men of his crew, are in a perfect state of health, according to the muster by his roll," &c. In the second place, we find the declaration of the Captain, and the report of Dr Hennen to the Governor, the first of which bears that he "sailed from Havannah on 12th May, with a crew of fifteen men, all in good health. A few days after, two men of the Swedish part of the crew complained of severe headache, and pains in the limbs, which increasing, they had to go to bed. Through sudorifics and purging medicine, they *got well in eight days*, so as to be able to attend their duties. During that time, five others had been taken ill of the same complaint, *but recovered in a few days*, under similar treatment. A lapse of ten or twelve days followed, during which the whole crew were in perfect health; but upon getting into a higher latitude, I met with gales and rain, when the greater part of the crew suffered much from wet, and immediately after, those who had till then been well, were taken ill, probably from cold produced by the weather, yet the symptoms which appeared were the same as in the others. The youngest recovered in a short time, but the eldest two died, one after five, the other four days illness, which took place on the 27th May, and 1st of June. The old clothes they had worn, together with hammocks, and what was in them, were thrown into the sea with their bodies."

In Dr Hennen's report to the Governor of Gibraltar, dated 2d August 1828, we find it stated, that he had minutely inspected the Captain and crew, "whom I found in perfect health, and I shall repeat my inspection before the expiration of their quarantine, on the 6th of the present month. In my letter of the 29th July, I mentioned, as the reason for putting the ship in quarantine for forty days, that two men died on the passage. It is now sixty-six clear days since the first

man died, and sixty-one since the death of the last, *and nothing like disease* has since appeared, nor have I the most distant reason to apprehend danger to the public health, from any circumstance connected with the Dygden."

3*d*, If the disease were contagious, it does not appear from the evidence to have been so in any high degree.

4*th*, It is an undoubted fact, known to every medical man who has been upon the rock, that remittent fever, attended by yellowness of skin and black vomit, is a very frequent occurrence during the autumnal months. I am in possession of an authentic document, containing a history of the symptoms and appearances on dissection, observed in cases of remittent fever treated in the Civil Hospital at Gibraltar in 1821, and the five subsequent years. Having compared these with the cases of 1828, I can discover nothing different. The two symptoms pitched upon by Sir William Pym, as pathognomonic of true yellow fever, viz. yellowness of the surface and black vomit, were present, and the morbid appearances found after death were perfectly similar.

The superior medical officers have had a heavy charge made against them in the following statement by Dr Smith. "At one period of medical rule in this garrison, every variety of fever *was ordered to be returned under one head.* Such, indeed, was the thraldom of the military medical press (if I may so use the expression,) at Gibraltar, from the termination of the epidemic fever of 1814, until the arrival of Dr Hennen in 1826, that it was considered a most wicked heresy for a surgeon of a corps to return fevers under any other head than *simple continued fever.* The consequence is, that although febrile diseases are the most frequent of the numerous cases treated both in the Military and Civil Hospitals, no correct table of fevers can be now formed from the returns of these establishments; no distinction whatever being drawn between the different species of remittent and continued. The authors of such a measure can best answer for themselves." Was this done to deceive the Governor, or did it receive his approbation to mislead the authorities in England? This calls aloud for serious investigation, in order to prevent the repetition of such disgraceful management. That it could have

been endured, can scarcely be believed, except by those who have been exposed to the tyrannical conduct of ignorant and obstinate medical superiors.

5th, That Sir William Pym's answers to the queries of the Spanish physicians, are highly discreditable to him as a scientific man, and calculated to injure the public interests, however much they might be intended *to fix him in the receipt of the salary derived from his sinecure office of Superintendant-General of Quarantine in Great Britain.* These answers are for the most part vague assumptions—some being drawn from insufficient evidence—others from no evidence whatever —while many of them are at complete variance with fact, of which last, the following is a notable example:—Answer to Question 3d. "The first cases were, as I have said, in a house of 24 district, *the situation of which is healthy, very well ventilated,* and 200 feet above the level of the sea." Now it was in this district of the town that the fever avowedly first appeared, and was for some time confined. Whether it was such a healthy, well-ventilated spot, or one, the air of which was saturated with febrific poison, the reader is left to draw his own conclusions after the perusal of the following statement, copied from a document which I received from Gibraltar. It was not written to contradict Sir William Pym's answer, as it never entered the writer's imagination that the Superintendant-General of Quarantine, or any other gentleman who had resided at Gibraltar, could have hazarded such an erroneous statement.

The district in question (No. 24.) "is situated in a natural gorge of the mountain, and is rendered still more close by a high wall raised for the military protection of the town. The wall is called 'Charles the 5th wall,' and is situated on the south of the town. The rear of the district, (24) together with the whole town, is impenetrably shut out from the influence of east winds by the rock itself. The district itself is particularly cut off from the beneficial effects of perflation by a high and impending semi-circular bluff of the mountain, in some degree insulating it from the rest of the town, on the north side. Charles the 5th wall is higher than the tops of the buildings in this district. This locality is therefore excluded

from the influence of every direct wind, unless that which blows from the west, which was not the case when the fever broke out. Besides, it is deserving of particular attention, that the superficial soil was filthy, that the district is intersected with numerous collateral drains, and gives origin to several others which unite on the level below, and these form one main sewer which disgorges itself into the sea at water mark, directly in front of this part of the town. The wind enters the mouth of this sewer on the beach, rushes upwards through the drains, and escapes through gratings (which are closely concentrated in this district) loaded with offensive and noxious exhalations, and diffused within a limited circle among the houses erected round the mouths of the great branches. There is also a deep and large common soil-pit in this district, which at the commencement of the epidemic was filled with impurities of every kind. In this situation a drain burst about the beginning of September, in the barrack-yard of the 12th regiment, and when I saw it, its contents had broke up the solid pavement, and was boiling over. The atmosphere of this part of the town was consequently noxious, and contained within itself a sufficiency of putrid matter to have disseminated a febrific miasm over the whole garrison. Now, it is a remarkable fact, that the two first cases of the fever originated on the ground floor of a badly ventilated house in this district, and in the close neighbourhood of one of the openings of the drains; and about 50 of the cases in the beginning of the epidemic were distinctly traced by several medical officers to come from the vicinity of the openings of the drains and privies of this district, or in the course of the drains."

We find the following statements made by Dr Hennen, in his official communications, which I have copied from Dr Smith's paper: "That so many cases of a fever of a very serious nature have appeared in the barrack of the Sappers and Miners, on Hargrave's parade, which I would observe to your Excellency is in the line of the drains, crossing from district No. 24, that I feel myself called upon to submit the propriety of immediately encamping that corps, and totally evacuating the barracks." In another letter to the Governor, Dr Hennen further stated: "In reference to my letter of this day's date,

I have minutely inspected district No. 24, in company with Mr Wilson of the civil hospital, Mr Woods, the medical officer attached to that district, and other staff-officers; and it is with much regret that I have to state to your Excellency, that at every step I took in that district, I had reason for surprise, not that fever had broken out there, but that it had not extended farther. From whatever causes it may have proceeded, the pauper population is dense to a degree incredible, except to those who have seen it. In sheds without ventilation, without drainage, and generally composed of the slightest materials; *in tiers of beds as close* as in a crowded transport, numerous individuals sleep. They go out to their work at an early hour, and return at gun-fire, locking up their miserable places of nocturnal shelter during the day, and leaving them saturated with the steam of their bedding, their food, and the overflowing receptacles of their ordure. The detail would be too disgusting to enter into; but I most respectfully submit to your Excellency, the indispensable necessity of sweeping away the whole of these sheds, which I have every reason to suppose are unauthorised by the government." A commission was subsequently appointed by the Governor's orders, to inspect the different districts of the town, which was composed of military as well as medical officers, and I copy the following statement from their report: "In the course of our inspection, we were struck at every step we took, with the density of the population." So much for Sir William Pym's Answer to the 3d Question, in which he has given a confident assurance of the healthy situation and well-ventilated state of No. 24. district, where the first cases of fever occurred in 1828. Both statements cannot be true, and I am sorry to say there are many other points in the same predicament. I wish it were possible for me to reconcile them with each other, not only on account of the reputation of Sir William Pym, as an old officer, but for the credit of the department to which he belongs, and the judgment of the authorities who appointed him to the lucrative situation of Superintendant-General of Quarantine in Great Britain.

6th, It is my opinion that the Board of Commission was not happily chosen by Sir George Murray. No medical officer

should have been nominated, or any other individual, however exalted his rank, who had previously expressed decided opinions on the subject to be investigated.

7*th*, I humbly conceive Sir George Don, the Governor, acted contrary to his orders, and certainly he did not act wisely, by delegating his authority as President of the Commission, to any individual, and more particularly to Sir William Pym, *the Superintendant-General of Quarantine*, who immediately nominated his newly-acquired partizan, Dr Barry, to be Secretary to the Commission. That Dr Barry is an ingenious gentleman is well known; that he changed his opinions very suddenly at the time of Dr Hennen's death is alleged, and has not been satisfactorily disproved; and that he immediately adopted the opinions of his new chief is undoubted. Whether Dr Barry, in his capacity of Secretary, gave colouring to the evidence produced before the Commission, or improperly put leading questions to the parties examined, to favour the views of his chief, is best known to those who were present at the investigations. But it will be admitted, that such functionaries as President and Secretary should not have been chosen from a class of persons to whom the slightest suspicion could be attached. On the list of the Commission, I find another name as exceptionable as those of Sir William Pym and Dr Barry, viz. that of Dr Broadfoot, *Superintendant of Quarantine* at Gibraltar. Besides these, there are also the names of two official gentlemen, the Captain of the Port, and the Town Major, who were thus also improperly placed in a situation either to accumulate or reject evidence, which might shew inattention or dereliction of duty to such an extent as to compromise their situations! The only unexceptionable appointments on the Commission were those of Colonel Chapman, Civil Secretary, and Judge-Advocate Howell, and the coincidence of their opinions is quite remarkable.

Colonel Chapman's opinion is as follows:—"Judging from the evidence produced before the Board, the manner in which it has been given, together with the description of persons who have been brought forward as witnesses, I am decidedly of opinion, that the late epidemic disease is of local origin. As to the importation of the late epidemic, I am of opinion,

that the attempt to prove the introduction of the disease, after many months of fruitless inquiry by those who wish to prove it, has totally failed."

Judge-Advocate Howell gave the following opinion:— "Upon a careful review of all the proceedings before the Board, I am of opinion, that the evidence brought forward has totally failed to prove that the late epidemic disease was introduced from any foreign source, either by the ship Dygden, or by any other means; and I am farther of opinion, that the late epidemic had its origin in Gibraltar."

From Botta's History of Tuscany, the following statements are extracted respecting the epidemic yellow fever which prevailed in Leghorn in 1804. "It was occasioned, as it appears, by the prevalence, during the summer of that year, of south winds, unusually warm and rainy; this sickness was by some termed the Yellow Fever, by others the Black Vomit; both names which agree well with the symptoms which mark it. *It began to rage in the lowest quarters of the city, and those most crowded and filthy*, to such a degree that some were cut off in seven days, some in five, others in three, and even in the short space of one day." "The disease was most violent in robust young men, more mild with the weak, the old, and with females; but almost all those last, attacked when pregnant, died; almost all the children escaped." Speaking of the remedies, it is remarked, "On the other hand, it was found, that from the air being impregnated with animal exhalations, the disease was more easily propagated, and the person infected was more violently attacked; and a confirmation of the argument was found in the circumstance, that the quarters of the city most filled with filth, and the houses of the poor, were the chief seats of the disease. On the contrary, the airy quarters, and where the houses were neat and clean, and enjoyed open and free air, were either exempted, or did not become worse, or the infection did not spread from one body to another." "It did not extend into the country, although persons in numbers, and goods in quantities, were transported and spread from district to district, and from the city to the country." On this occasion, also, an attempt was made to prove the importation of the fever from Vera Cruz, but was not successful.

When the yellow fever prevailed in Philadelphia in 1794, the celebrated Dr Rush was most shamefully persecuted by the authorities, to whom many of his medical brethren unhandsomely lent themselves, for having proved that the yellow fever existed in that city—that it was generated in the place, and had not a foreign origin. It is now more than forty years ago; and after reading the report made on the subject by his opponents, I can readily join Dr Rush in his conclusion, that "it is impossible to review this report, without blushing for the shameful submission made by the Science of Medicine, to the commercial spirit of the city."

It may be useful to my readers to know the evidence which Dr Rush produced to shew the local origin of the fever, and it will be observed that an attempt was made on this occasion to fix its importation on a ship. "It was produced," says Dr Rush, "by the exhalations from the gutters, and the stagnant ponds of water in the neighbourhood of the city. Where there was most exhalation, there were most persons affected by the fever. Hence the poor people, who generally live in the neighbourhood of the ponds in the suburbs, were the greatest sufferers by it. Four persons had the fever in Spruce Street, between Fourth and Fifth Streets, in which part of the city the smell from the gutters was extremely offensive every evening. In Walter Street, between Market and Walnut Streets, many persons had the fever: now the filth of that confined part of the city is well known to every citizen. On the 25th August, the brig Commerce arrived in the river from St Mark. After lying five days at the Fort, she came up to the city. A boy who had been shut out of his lodgings, went in a state of intoxication and slept on her deck, exposed to the night air, in consequence of which the fever was excited in him. This event gave occasion for a few days to a report that the disease was imported; and several physicians, who had neglected to attend to all the circumstances that had been stated, admitted the yellow fever to be in the town. An investigation of this supposed origin of the disease soon discovered that it had no foundation."

Vitiated air,* and the effluvia which proceeds from the bodies of individuals crowded together in jails, hospitals, and ships, have always been abundant sources of fever. Dr Fordyce mentions instances where sheep and hogs were transported, during the American war, from England to America, in the holds of ships, in which many were confined in a small space: an infectious fever frequently broke out among them, which destroyed great numbers.

History affords many melancholy examples of the baneful effects of vitiated air and human effluvia, and the speed with which they destroy animal life. The best example is to be found in the occurrence which took place last century in the black hole at Calcutta. One hundred and forty-six unhappy individuals were forced into a dungeon, about eighteen feet square, at eight o'clock at night, and at six next morning, when released, only twenty-three came out alive; *most of these were in a high putrid fever, and subsequently died.*

It becomes an interesting question, but one too extensive for this work, how contagion propagates itself, and to which part of the body it is first applied? In this inquiry, we shall be much assisted by the circumstances which are observed to take place after inoculation with small-pox. The mucous membrane of the lungs seems to be one of the first parts in which the diseased action is to be detected; and careful observation has induced me almost to believe, that in diseases produced by contagion, the bronchial membrane rarely if ever escapes.

Fourcrois tells us, that in several of the burial-grounds in France, in which the graves were dug up sooner than they ought to have been, the persons employed have occasionally been asphyxiated; those who were standing at a little distance, were often affected with vertigo, fainting, nausea, loss of appetite, &c. History affords us remarkable instances of the occurrence of diseases decidedly epidemic: the most ancient are those which will be found in sacred writ, in which we find, that on one occasion seventy thousand persons were

* It is to be regretted, that the term *Malaria* is not restricted to foul air, according to its literal meaning.

destroyed by pestilence in three days' time ; and we are told, also, that one hundred and eighty-five thousand persons were destroyed in the Assyrian camp in a single night. The most remarkable epidemic of modern times, is the Cholera of the East, which extended itself in the very teeth of tempestuous winds.

Pythagoras first started an opinion respecting critical days, and he had an unlimited belief in the occult powers of certain numbers. Hippocrates seems to have entertained similar opinions : and it is an essential part of the old doctrines of concoction, according to which it was supposed that a separation of the morbific matter had a tendency to take place on one of the critical days, by a discharge from the skin, bowels, kidneys, or blood-vessels.

I have no belief in the influence of critical days, although I admit that the crisis frequently takes place in some of the ways mentioned. When an organ is affected with disease, there is a constant effort of nature to throw it off : this effort is, in truth, one of the great principles of life, and its object is effected by a determination of blood to another organ : occasionally a spontaneous discharge of blood takes place.

From the time of Hippocrates, it has been generally believed that fevers have a tendency to remit on the 3d, 5th, 7th, 9th, 11th, 14th, 17th, 20th days, and even the 21st. Many modern physicians have adopted this doctrine; but I doubt much whether it has not proved more injurious than beneficial in the treatment of disease. Often may physicians be seen prescribing a placebo, because the critical day is at hand, when they ought to be actively employed in eradicating the disease. When attending to this point, I have very often found the calculations made erroneously ; and not unfrequently I have seen physicians disagree as to which was the proper critical day—one calculating from the period when the rigor took place—another from the period when the heat of skin occurred—and I have seen a third calculation made from the time when the patient confined himself to bed. There can be little doubt, that fevers and other diseases have a tendency to run through a regular course, and when they terminate favourably, this happy event generally takes place upon the occurrence of

an eruption, or of some discharge, as by diarrhœa, copious perspiration, flow of urine, expectoration, &c. It cannot be denied, however, that in some diseases there is a strong tendency to periodicity, but far more so in the accession than termination. Thus, in intermittent fever, the attack may come on regularly at the usual period, but each stage may occupy a shorter or a longer space of time in one paroxysm than another. Sometimes an individual dies in the cold fit, but much oftener the hot fit is not relieved by sweating, and his disease becomes a continued or remittent fever, or inflammation of a particular organ takes place. But it is of little importance whether the doctrine of critical days be true or false, if the physician acts wisely, and neglects nothing which can tend to reduce the diseased action.

INTERMITTENT FEVER.

Of all the febrile diseases, intermittent is generally the simplest in form. It is composed of three stages, beginning with a cold fit, followed by heat, and terminating in profuse perspiration. It has been known from the earliest ages, and is most prevalent in some parts of North and South America; the Pontine marshes near Rome; in Holland; and in the fens of Lincolnshire and Cambridgeshire in England. We are told, that in the sixteenth century, this fever was very prevalent, and proved fatal to a great number of people in London; and in the year 1558 it raged like the plague, and was also very fatal; but it has become less frequent in Great Britain, which is to be ascribed to the increased comforts of the people, to their habits of cleanliness, and to the improvement which has taken place in the climate, owing to the draining of lands, and cultivation of the soil. It has been stated, but, I believe, without foundation, that a miasm producing intermittent fever is generated in London, in the neighbourhood of St James's Park. Intermittent fever is of very frequent occurrence in all warm countries, and is one of the purest specimens of a disease depending upon an irregular determination of

blood, in which the system is often relieved by the unaided powers of the constitution.

Cullen's definition is, "Fevers arising from marsh miasmata, consisting of many paroxysms, with intermission, or at least with evident remission intervening, returning with remarkable exacerbation, and in general with shivering; one paroxysm only in a day."

Like most symptomatical definitions, this is very exceptionable. Paroxysms of intermittent have taken place from sudden change of atmosphere in situations where no miasm ever existed; and the most severe cold stage which ever came under my notice, and which lasted twenty-six hours, was produced by exposure to frost after the individual had got wet on the top of a coach. Mr John Hunter informs us, that two children had ague from worms; they took bark, but it did them no good; but the worms were destroyed, and they got well. We have in like manner, says he, agues from many diseases of particular parts, more especially of the liver and spleen, and from an induration of the mesenteric glands. Many instances are also recorded from repelled eruptions, the drying up of old discharges, as well as from the application of cold.

Sir George Baker has given an account, in the Medical Transactions, of an Intermittent that prevailed in 1780; it affected the inhabitants who lived in the higher parts of the country, while those in the marshes escaped. Sir Gilbert Blane informs us, that while the village of Greenhythe, nearly on a level with the marsh at Northfleet, is unaffected with Intermittent fever, the adjacent hills suffer considerably from it.

There are usually reckoned three kinds of Intermittents, the Tertian, the Quotidian, and the Quartan. But they ought strictly to be regarded as the same disease, with a longer or a shorter interval; and the one frequently runs into the other. We often, however, see a double Quotidian. I have observed, that the longer the interval, the more severe is the paroxysm, and *vice versâ;* but there are many exceptions. TERTIAN, is employed to express that form of disease in which there is an interval of *forty-eight hours* from the commencement of one

attack to that of another; QUOTIDIAN, *twenty-four;* and the QUARTAN, *seventy-two.*

Phenomena of Intermittents.

When an individual has once had an attack of Intermittent fever, he is afterwards more liable to the disease, and is sensible of its approach some time before any one suspects him to be ill; the toes and the last joints of the fingers feel cold and benumbed, and the nails have a blueish colour; he has sensations of languor, and long fits of yawning; occasionally at this period there is headache, sometimes stupor, and pains in the back and loins.

Cold Stage.—When the paroxysm actually commences, the patient feels the extremities cold, with a sensation as if a small stream of very cold water were flowing down the spine, which extends itself to the thorax and abdomen. He has great desire for warm drink, and to cover himself with as many bedclothes as can be procured; the prostration of muscular power is considerable; the sense of cold very soon becomes insupportable; the teeth chatter, and there is a universal tremor over the body; and if I can trust my own sensations, and the accounts of others, the tremors affect internal as well as external parts. These tremors sometimes terminate in convulsions. The respiration is always laborious, short, and hurried, and the individual is unable to take in a deep inspiration when desired; a short hard cough frequently attends, without expectoration; there is great oppression at the præcordia. Some individuals complain most of headache, some of pain in the back, in the lumbar region and lower extremities, and others of universal pain. In almost all cases the patient is incapable of attending to any thing. Sometimes there is stupor, and at others, coma or delirium. The features are much shrunk and pale; the eye looks dull and hollow, while the cheeks and lips are more or less of a livid hue. The pulse is oppressed and weak, sometimes slow, at others quick, and frequently intermits; but the violence of the tremors renders it often impossible to feel the pulse distinctly. The tongue is moist. It is a curious circumstance, that while the patient complains of intense cold, the heat of the body every where,

except in the extremities, is sometimes above the natural standard.

The paroxysm occasionally comes on without any rigor, instead of which the patient feels a slight sensation of cold, or severe headache, is lethargic, or affected with languor and yawning. Sometimes the paroxysm is announced by violent articular, lumbar, and frontal pains; and sometimes a patient falls into a profound sleep for several hours, and awakes in a violent hot stage. These various forms are called by the vulgar the dumb-ague. It sometimes happens, that at the next attack, instead of a regular paroxysm, a violent pain is felt in the situation of the supra-orbitary foramen, and extends to the brow, affecting the nervous twigs of the frontal branch of the fifth pair; this pain often continues for many hours, and seems to resemble the Tic Douloureux. But it would be vain to attempt a description of all the appearances which this disease occasionally assumes.

The duration of the cold stage is very various, rarely less than half an hour, and seldom exceeding four. It sometimes happens that an icy coldness steals over the whole surface, and in aguish countries it is not an uncommon circumstance for persons to die in the cold stage.

Hot Stage.—After the cold stage has continued for a longer or shorter period, the hot stage commences; the one gradually runs into the other, there being no distinct interval between them. The change is attributed by patients themselves to the treatment which has been employed, or to the effects of vomiting, which sometimes accompanies the cold stage. The skin becomes hot and dry, sometimes pungent; the face flushed and swollen; the thirst urgent, the tongue parched; there are restlessness, general uneasiness, and oppression at the præcordia; the respiration is hurried and anxious; and almost invariably, the patient complains of acute pain in some region of the body, generally in the head and lumbar region, very often also in the thorax, and left hypochondrium; there is frequently a slight degree of disturbance in the mental faculties, sometimes indeed delirium. On some occasions there are symptoms which announce cerebral disturbance, viz. severe headache, tinnitus aurium, and throbbing of the carotids, &c.

The pulse is frequently quick, sharp, and bounding, even in patients whose health and strength are already much impaired.

I have seen the thermometer, the accuracy of which had been well ascertained, rise in the hot fit, even in this country, to 110°, and in warm climates it is stated to rise as high as 112°.

The duration of this stage varies more than the former; in general it continues from four to twelve hours, and terminates in perspiration: but on some occasions the febrile symptoms continue for several days or weeks, when the disease is termed a continued fever; now and then there are marked remissions followed by exacerbations, when it is called a remittent: in addition to the last-mentioned circumstances, there are sometimes considerable irritability of stomach, black vomiting, and a yellow tinge of the skin, then the case is termed a bilious remittent, or yellow fever.

Sweating Stage.—After the hot stage has existed for some time, it terminates in the sweating stage; the perspiration appearing first on the forehead, arms, and legs, soon becoming general and profuse. It is difficult to calculate the quantity of this excretion in any case; but it is admitted by all who have attended to the phenomena of intermittents, to be very great. From the moment the perspiration begins to appear, the uneasy sensations, and other symptoms above described, begin to subside, and generally vanish after it becomes copious.*

Many patients fall into a profound sleep for several hours, and then awake quite refreshed; others complain much of weakness, while some whose constitutions have not been previously injured, are able to resume their ordinary duties almost immediately.

When this disease continues for some time, the patient not only becomes weak, and loses flesh, but he has no interval of

* M. Andral, in the first part of his very excellent pathological writings, p. 477, mentions a very curious case. A young man, who had been hemiplegic on the left side of his body from his infancy, was attacked with tertian intermittent. He only perspired on that half of his body which had not been paralysed. He stated that in his best health he never perspired but on one arm and leg, and one side of his face and neck.

ease; each paroxysm increases his sufferings, and he feels comparatively little relief from the perspirations, which he often prolongs, in the vain hope of alleviating his symptoms. He complains of headache, intolerance of light and sound; or he has a cough and dyspnœa, which will almost always be found to depend on inflammation of the lining membrane of the air passages; or he has constant thirst, flatulent distension of abdomen, constipation, or diarrhœa, with griping pains in the bowels, a dull pain and sense of weight in both hypochondriac regions, more particularly in the right. The skin continues hot, and feels harsh; the feet and legs frequently become œdematous; the abdomen permanently tumid; the urine scanty; the tongue dry at the tip, the rest of it being furred; the patient passes restless nights; and perhaps in the very next paroxysm he may die in the cold stage; or the sweating stage may not succeed the hot, and he may die in a few days of continued or remittent fever; or decided marks of inflammation of the brain, liver, lungs, &c. take place, and he is cut off, from the effects of disorganization in these organs. Such circumstances are of frequent occurrence in warm countries, where intermittents prevail; many such melancholy examples will be found, by referring to the works of Sir John Pringle and others; but more particularly to Sir James Fellowes's reports of the destruction occasioned by this fever among our troops employed in the expedition to Walcheren. The history of the fever which annually prevails at Rome, and which has been so ably and faithfully described by M. Bailly, also corroborates the above statements.

This fever sometimes attacks individuals when labouring under internal diseases, such as dysentery, hepatitis, &c., and I have frequently seen a remittent converted into an intermittent. It may also be mentioned, that enlargements of the parotid take place during the course of intermittents. The gland increases in size and hardness during each cold fit, and it seems, in the first instance at least, to owe its enlargement to sanguineous engorgement; subsequently the gland suppurates.

It has already been mentioned, that when intermittents have continued for some time, the lower extremities frequently

become œdematous, the belly tumid, and sometimes even ascites takes place. The first does not denote danger, but the last always occasions an apprehension of an organic lesion of some important viscus. Nevertheless, both may be occasioned by mere functional derangement. In these cases, the thirst is considerable, the secretion of urine scanty, and sometimes dysenteric symptoms manifest themselves.

Appearances found on Dissection.

The following appearances have been observed in the bodies of those who died in the cold stage.—The vessels of the brain gorged with venous blood; and the carotids, after passing into the skull, may sometimes be seen greatly distended with black blood.—The lungs much congested, of a dark colour, which is the condition described by the older writers, by the term "putrid state." In the very few instances which have fallen under my own observation, I have not observed any structural disease in these organs: for, upon making sections, and squeezing them in water, they have resumed their natural appearance and buoyancy.—The heart, and veins near it, are gorged with blood; and sometimes an effusion of blood, or blood serum, is found in the cavity of the pleura. In the abdomen dark-coloured patches are sometimes seen on the peritoneum, occupying a considerable extent of the intestinal tube; and, upon cutting through these portions, all the tissues are found highly injected, and it is probable that this appearance has often been mistaken for mortification.—The liver is sometimes gorged with blood and discoloured; but when treated, like the lungs, in water, this organ is restored to its natural colour, unless it has been altered in structure by previous diseased action, when it is easily broken down, like coagulated blood. I have seen the spleen in a similar state; but was not able, by washing, to restore it to its natural appearance. The stomach and intestines contained, in one instance, a dark, sanguineous-looking matter, like the black vomit.

In corroboration of the above statement, as well as in proof of the pathological and practical views yet to be detailed, I beg to subjoin a short account of some of the interesting cases

and dissections described in the excellent work of M. Bailly,* whose zeal in the cause of science led him to visit Rome in the sickly season, for the purpose of investigating the nature and seat of intermittent fever.

"Case I.—Benoit Simouelli, æt. 30 years, of a strong constitution, affected for some time with a tertian fever, came to the hospital on the 2d July 1822.

"3d, Had a slight febrile access, afterwards took ℥ij. of bark.

"4th, Towards mid-day, he walked in the ward, felt very well, and laughed with the other patients. All of a sudden, he was seized with violent shivering, to which succeeded a very high fever, during which he had alternate flexion and extension of the fore arms, and profound coma. He died in six hours after the commencement of the attack.

"Dissection the following day at 2 o'clock P. M.—Vivid injection of the whole of the arachnoid; colour of the cineritious matter of the brain much deeper than natural, approaching a dark reddish grey; a little water in the ventricles. No false membrane on the arachnoid. Great inflammation of the stomach, especially towards its great curvature, which was every where of a deep, generally diffused red. Many worms in the small intestines, which presented also inflamed portions, especially where the ascarides had collected.

"Case III.—Pierre Donati, æt. 28, of a good constitution, was brought to the Hospital of Saint Esprit on the 2d August 1822.

"An hour and a half after mid-day, he was seized with an accession of fever, which commences by excessive coldness, followed by intense heat, and stupor. He lay upon his back, with his eyes half open. He awoke when any one spoke to him, and fell again into the same state of coma. His pulse was frequent and strong; the skin burning. In the night copious sweating appeared, the intellectual faculties returned, and in the morning he was in a state to answer concerning his health. Took several ounces of bark.

"3d, The fever returned half an hour after mid-day. Commenced with a very violent coldness, followed by heat, and stupor; but nevertheless he always awoke when any one called him, and he opened his eyes. The fore arms were bent upon the arms, and could not be extended; the teeth were clenched, which prevented the state of the tongue from being seen. Sensibility of the skin diminished. He lies upon his back. There is no pain upon pressing the belly. At half past two o'clock, general perspiration, but not so abundant as the first. In the evening, return of sensibility and intelligence. Cessation of contraction of the arms. But the ideas are less clear. Other doses of bark.

"4th, The morning of the third day after his arrival, at half past 7 o'clock, the pulse was frequent; stupidity; together with a drunken appearance. At

* Entitled Traité Anatomie-Pathologique des Fièvres Intermittentes, Simples et Pernicieuses, 1825.

11 o'clock, a return of the cold, subsequent fever more violent; stupor more profound, coma, return of the rigidity of the limbs; subsultus tendinum; he always lies upon his back; pulse full and strong. At half past 3 o'clock, sweat appeared, but less copious. After the sweat, he could not give an answer, and he was unconscious of his own state; cessation of the contractions. Died at 10 o'clock in the evening of the 5th.

"Dissection 12 hours after death.—Lively inflammation of the whole of the arachnoid; serosity between the circumvolutions, with engorgement of the vessels; injection of vessels of the lyra. The brain being raised, there escaped half a pound of blood. Some points of a red colour in the stomach and intestines; liver gorged with blood; spleen voluminous and easily torn. No morbid appearance in the chest.

"Case IV.—Francois Lauretti, shoemaker, æt. 60, of a lean constitution, fell sick on the 17th August 1822. He had the fever every day, beginning with shivering, and terminating in the night by sweating. At the same time he was constipated, and had pain in the epigastrium. Was brought to the Hospital of Saint Esprit on the 24th August. In the evening, the surface of his whole body was of a deep yellow citron colour; said this colour appeared during the last paroxysm; extremities cold, while he had a feeling of internal heat; tongue red and dry; pulse 108, like a thread. He had still so much recollection, that he smiled on seeing us approach him, for we had already spoken to him when he was brought to the hospital, and before he was yet put to bed. He complained of nothing, appeared quite tranquil, and replied perfectly to all that we asked him.

"25th.—In the morning he was found in a state of coma; and died at 10 o'clock, A. M.

"Dissection.—The body was of a lemon yellow colour. On opening the head, the *dura mater* was tinged as yellow as the skin; by repeated washing this tint could in part be removed; but on holding it to the light, the diminution of colour was scarcely perceptible; injection of the arachnoid; cortical substance of a deep colour; yellowish serosity between the convolutions: On slicing the brain, a number of red points were seen; a little water in the ventricles; the cerebellum natural; the lungs healthy; the cavities of the heart appeared to us larger than usual; in the right ventricle, was a clot entirely formed of albumen, as yellow in colour as that of the skin and *dura mater*. The belly, before being opened, was concave, and resting on the vertebral column; the stomach contracted on itself; it was everywhere of the colour of lees of wine: Although it was well washed, there adhered to its surface a thick mucus, similar to the tenacious expectoration of patients labouring under pulmonary catarrh. The smaller curvature, and a portion of the greater, presented that kind of eruption described at No. 30. When examined with a lens, it offered nothing more remarkable than to the naked eye, only instead of appearing to consist of small perfectly round elevations, and entirely separated from each other, they communicated by their bases. The redness of the stomach was less lively towards the *pylorus*, but it began immediately at the duodenum, where it was very intense, and continued without interruption in the small and large intestines. The gall bladder was green external-

ly, and filled with a black and thick bile; on pressing it strongly, only a few drops could be made to pass into the duodenum; the orifice of the *ductus choledochus* could not be distinguished, in the midst of red, bloody, and swollen folds of the mucous membrane of the *duodenum*, but by this means. The *ductus choledochus* being opened, presented nothing remarkable, except that its mouth was drawn into the *duodenum*, in consequence of the swelling of the inflamed tissue of the latter. The liver was of ordinary consistence; its colour was of the yellow of powdered bark: this is the only time I ever saw it in this state. The spleen was of the usual size, and quite diffluent.

"Case V.—Jean Olivier, æt. 40, of a good constitution, was brought to the hospital on the 6th July. He was then without fever. In the evening the fever came on, preceded by shiverings, and followed by violent heat. Pulse strong, 120; coma. He lies upon the back. Right arm immoveable. The left arm bent and carried towards the head. Sensibility everywhere. When an attempt is made to open the left eye, he appears to experience pain, and contracts the eyelids. Belly painful.

"7th, In the morning.—Coma; lies upon the back; pulse strong, 108. He died at seven o'clock, P. M.

"Dissection.—Injection and thickening of the *arachnoid*; engorgement of the vessels which run on the convolutions, which are separated by watery exudations; the left *lyra* greatly injected; watery effusion at the base of the brain; phlegmonous eminences in the stomach, which were of a grey slate colour; invagination of the small intestines; spleen voluminous and pulpy.

"Case VI.—Vincent Orsini, æt. 60, came to the hospital the 3d July 1822, in the following state: Coma; pulse insensible; extremities cold; demi-flexion of the two thoracic extremities; when an attempt is made to extend them, a resistance is felt on the part of the flexor muscles. Left eye half shut, right eye open, pupils dilated, immoveable; tongue dry, lying in the very bottom of the mouth. He manifests pain when pressure is applied to the belly. Died the same evening.

"Dissection.—Vivid inflammation of the *arachnoid*, with great injection of its vessels. There escaped some serum, which was situated between the *dura mater* and *arachnoid*. A fibrous tumour of the size of a large nut, adhered to the dura mater, under the posterior angle of the parietals, and compressed the brain; although the injection of the *arachnoid* was very lively on both sides, it was, however, greatest on the left. Hydatid in the *choroid plexus*, the size of a small pea. The water that was between the *arachnoid* and *dura mater* was more abundant on the left side than on the right; brain pretty soft. General inflammation of the stomach; the S. of the *colon* was of a brownish red.

"Case VII.—Donato Fanti, a collier, æt. 50, was brought to the Hospital of Saint Esprit, in a comatose state, which continued even till death. Puls strong, beating 80 times in a minute; when the extremities were pinched, the patient manifested pain; his skin was hot and moist; when they opened his eyes, he did not direct them to any object. It was impossible to see his

tongue, because his jaws could not be separated sufficiently. He only complained of pain when he was pressed in the region of the liver, and did not appear to suffer any thing when pressed on any other part of the belly.

"Dissection.—On opening the cranium several ounces of blood escaped; the arachnoid was strongly adherent to the dura mater by granulations resulting from old inflammation; the vessels of the brain were very much engorged; on slicing it drops of blood escaped from the divided vessels, which reappeared even after wiping. The liver was blackish; it appeared composed only of black blood, slightly coagulated, and of cellular bands, which alone offered some resistance to the finger; where this weak resistance was overcome, the liver was but of the consistence of thin jelly; for the blood appeared effused in its tissue, which resembled a pulpy mass. The intestines were inflamed in several points, and each inflamed portion corresponded to some knots of worms which were still alive. The lungs, the spleen, and the stomach, were healthy.

"Case IX.—Joseph Totti, horse-doctor, of a sanguine bilious temperament, strong constitution, was accustomed to go down every year to marshy situations, to direct the workmen in seed time, or at the harvest, which occasioned obstructions in the spleen and liver. In 1811, in the time of harvest, being then aged 40, and working with great activity, he was affected with an intermittent fever, which continued till the third paroxysm. At last he returned home; the fatigue of the journey procured for him a very short sleep. I saw him in the fifth paroxysm, when he was in the following state: Agitation; impossibility of finding a position which procured rest; pain under the right false ribs, mounting to the top of the shoulder, and extending to the left hypochondrium; pains in the articulations; head heavy; tongue covered with a white crust, bitter taste in the mouth, vomiting, thirst; face livid; pulse irregular, neither soft nor hard; great difficulty in respiring; urine red and clouded. He got an injection to loosen the belly. He had little repose during the night, for the fever returned, preceded by a general coldness over all the extremities, and the pain in his side was aggravated.

"6th day.—A frequent dry cough without expectoration. The emulsions had eased the thirst. Had no appetite. The bitter taste in the mouth had disappeared. A pound of blood was drawn from the arm; the coagulum was almost soft; the serum was livid. At the return of the fever, the cold only attacked the extremity of the feet.

"7th day.—The pain worse and worse; the difficulty of respiring still greater; frequent eructations; urine always the same. As the tongue was white, and as he had no stools after the lavement, he took ℥i. of manna, which produced a bilious stool. In the night he had no sleep; delirium.

"He became gradually worse, and died on the 14th day, when in the act of raising himself to speak to his Confessor.

"Dissection.—The body offered nothing remarkable but tension of the belly. In the abdomen, there was a sanious effusion mixed with a little blood. The liver was putrid and tuberculous; this affection commenced towards the convex part, extending itself on all sides, and descending towards the concave part; nevertheless, the greatest destruction was on the convexity;

the rest was engorged and inflamed; its volume was natural. The gall bladder contained a little thin clear bile, not viscid. The inferior face of the diaphragm was erysipelatous; the stomach and small intestines were full of water; the spleen double the ordinary size, and of a black colour; the exterior surface of the right lung was covered with a white crust, the inferior part adhered to the *pleura costalis*.

"Case X.—Dominique de Marco, æt. 30, of a good constitution, was affected with a simple tertian fever since the 24th June 1822. On the evening of the 7th July, he was seized, according to the report of his parents, with an accession of the pernicious, comatose intermittent. He arrived at the hospital on the morning of the 8th July, and he was in the following state: Coma; decubitus on the back; face red; fore arms bent and contracted; pulse 112; convulsive trembling of the fingers; legs stretched and immoveable; sensibility every where. They made him swallow three ounces of bark in six hours.

"At 2 o'clock.—Pulse 100; sinapisms to the feet.

"9th, in the morning.—He is in a sweat; remission of the fever; pulse 88; a watchful coma: he hears, but does not answer, although he looks; two hours later, pulse 92, very full; several ounces of bark.

"Evening.—Pulse full, strong, 96; profound coma; resisting stiffness of the right arm; he cannot shew his tongue; skin hot, and always moist with sweat. To make him swallow the bark, it was necessary to pinch his nose, and hold his mouth open with a key; afterwards water was poured in, which he kept in his mouth, and finished by rejecting it. He has taken seven ounces of bark through the course of the day.

"10th, in the morning.—Pulse 140, strong and full; coma; flaccidity; general immobility; mouth open; blood was taken from the jugular; respiration stertorous. Died towards mid-day.

"Dissection.—Injection of all the vessels of the *arachnoid*, even to the very smallest ramifications, and on both sides; but on the right side, and upon the anterior lobe, it was of an intense red, without any distinction of vessels; when it was torn away from the convulsions the *pia mater* was also removed; it adhered so intimately to the *arachnoid*, as to resemble one membrane, red, very thick, and in the tissue of which blood was effused, which appeared immediately to coagulate: little water in the ventricles; the brain of the ordinary consistence: when it was cut, there appeared a great number of red points, which immediately became the seat of large drops of blood; the *arachnoid* of the *cerebellum* was also highly injected, the consistence of that organ was natural. Stomach grey, externally, contracted, slightly inflamed; small intestines presented two invaginations; a portion of this intestine white, transparent, distended with gas; the rest grey and contracted: in three places all the circumference of the tube is red, both within and without, occupying the space of three inches in length; all the large intestine is white, &c. Liver gorged with blood; spleen weighed between two and three pounds, and reduced into a grey, pulpy state.

"Case XI.—Paul Tossini, æt. 30, of a good constitution, was taken on the

morning of the 29th June with a fever, which commenced with heat, and which returned every day until the 6th July, when he arrived at the hospital. He had had thirst, bloody stools, tenesmus, enlarged spleen; and he had taken cooling drinks and a purgative. He is now in the following state: His appearance is stupid; somnolence rather than coma; general pain of head. The patient only appears to be drowsy, for he is easily awoke, and understands sufficiently well what is said to him; decubitus on the back, the knees are drawn up, but he cannot extend the thighs without experiencing pain: during his slumbers the right eye is partly open, the left shut; it is impossible to depress the lower jaw, without producing suffering; the tongue is dry, red, covered with a black crust, which extends from the point towards the middle, the breadth of which is not more than half an inch; the tongue is drawn a little to the right; at intervals, slight convulsive movements of the hands; pain of belly upon pressure; skin hot, dry; pulse 120. When the right arm is extended the flexor muscles contract, and the patient seems to suffer much pain; but when once extended it continues so.

"In the night, bloody dejections, extremely fetid; declination of the paroxysm, which returned on the 7th in the morning; at seven o'clock the patient complained of cold. I did not see him till six o'clock in the evening, when the paroxysm was beginning to decline: the skin was hot and moist; the lips were encrusted; the pulse was not to be felt; respiration hurried; the two fore arms bent, when it was wished to extend them, above all the right, violent pain was produced; preservation of sensibility, every where; sometimes the right eye a little open, the left being shut. He had several convulsive movements this morning and towards mid-day. He took kino before the accession at the moment when he already felt the cold. Increase of coma; died at half-past seven o'clock in the evening.

"Dissection.—General injection of the arachnoid, particularly that part which covers the cerebellum and the lateral part of the commencement of the spinal marrow. The injection of the right side was a little more intense than that of the left, although it was otherwise as vivid as it is possible to imagine, for it was not a simple injection, which merely shews the smallest vessels. The arachnoid was of a deep red, as if all its tissue were penetrated with blood. The brain presented nothing remarkable. The intestines were injected in the same manner, from the œsophagus even to the anus; their whole thickness appeared to be impregnated with blood; they were not either thicker than natural, nor contracted; on the contrary, they were distended with flatus. Spleen weighed from eight to ten pounds; when it was put upon the table, it became flat like a bladder half filled with water; its tissue was reduced to a pulp.

"Case XIII.—François Pompei, æt. 19, was seized on the 1st July 1822 with an accession of fever, in consequence of a sudden chill which he experienced on entering a cool grotto when his body was covered with sweat. He was brought to the hospital on the 2d July at six o'clock in the evening. Before he arrived, he had a considerable epistaxis. He was in the following state; profound coma, eyes widely opened, directed to the right, fixed; expression besotted; general immobility; decubitus on the back; insensibility

of the extremities when pinched, they were quite flexible. He did not answer the questions which were put to him; the direction of the eyes did not change even when one approached him. He manifested pain when his stomach was compressed; skin burning hot; a white œdematous swelling of the face; his parents said that this tumefaction had come on since the disease, for previously he had rather a thin face. This access continued until Wednesday morning the 3d July; he then took an ounce and a half of bark.

"4th July, Thursday morning.—The paroxysm returned, at the commencement of which, he could still give answers to the questions put to him, but the coma went on increasing, and with it all the symptoms above described; the pulse was strong, vibrating, full, beating 84; the same direction of the eyes to the right, the same immobility of these organs, and of the extremities; respiration short. Eight leeches to the ears; died at ten o'clock in the evening.

"Dissection.—Several ounces of blood flowed from the nose in the dead-room; in cutting the scalp, more blood escaped; the whole might have weighed a pound. General engorgement of all the vessels which ramify upon the convolutions; the brain, still covered by the dura mater, gave a feeling which made us believe that there was a fluid in the interior, nevertheless there was only a little serosity in the ventricles; the substance of the brain was of the natural colour. All the intestinal tube, without any exception, presented a red appearance, which was owing to a general injection of all the vessels, even in their smallest ramifications. It would be difficult to inject so perfectly the vessels either of the intestines or of the mesentery, as they were in this body. The intestinal tube, although a little transparent, was penetrated with this congestion throughout its whole thickness; every thing indicated the first stage of a violent inflammation, that is to say, of a sanguineous congestion.

"Case XV.—Thomas Adami, æt. 20, was brought to the hospital on the 23d August 1822. He was delirious; they were obliged to secure him. After mid-day, the delirium subsided. A profound and intense coma succeeded; the pulse was strong, hard, and beat 85; the extremities were flexible, but motionless; decubitus upon the back; pupils immoveable; features swollen and intensely hot; general insensibility. Body covered with a clammy sweat. In the evening the respiration was more hurried, and very much embarrassed; pulse not to be felt; froth was discharged from the mouth; he was insensible even when his skin was pinched; died at one o'clock in the morning.

"Dissection, eleven hours after death.—General inflammation of the *arachnoid*, of which the very smallest vessels were injected; no serosity; the cortical substance was of a deep red, compared with that of a subject dead from a shivering fever, (*la fièvre algide*) which we shall notice by and bye, &c.

"Case XVI.—Antoine Turianne, æt. 12, of a good constitution, was brought to the hospital on the 23d July 1822, at four o'clock in the afternoon. He was in the following state: Commencement of stupor, his answers are slow, and not quite correct; the questions put to him made him discontented and

unhappy; agitation; he turns himself on all sides in his bed; eyes open and stupid; skin hot and dry. (Bled to 8 oz.; lavement; tisane.) In the evening increase of stupor, in consequence of the accession of another paroxysm, coma profound, eyes open, pupils contracted and immoveable; the fore-arms bent upon the arms, no pain on pressing the belly. Sinapisms to the feet.

"24th July, in the morning.—Continuation of coma; pulse 124; head intensely hot; flexion of the fore-arm; it is impossible to depress the inferior jaw. Bled at the feet to 8 oz. In the evening, remission of the fever and of the convulsive symptoms; skin slightly moist; it was necessary to pinch his nose to make him swallow ℥ ij. of bark.

"25th, in the morning.—Return of the fever, and the flexion of the fore-arms; continuation of the stupor; does not reply to questions; insensibility of the skin of the legs, that of the arms sensible; head intensely hot; decubitus on the back; eyes open. Boiling water applied twice to the feet; the patient did not feel it very acutely. Pediluvium during six minutes; snow applied to the head; the pulse fell to 82. Return of intelligence; he swallowed voluntarily the bark; but a little afterwards, violent agitation of all the body came on: the inferior extremities, which from the commencement were cold, were neither heated by the bath, nor inflamed by the application of boiling water and sinapisms. Of the four ounces of bark, which they made him take, he vomited more than two; neither could he retain the bark injections which were exhibited. He remained in this state till 6 o'clock in the evening: the coma returned, and he died at 7 o'clock.

"Dissection.—A very vivid injection of all the *arachnoid*; between its folds there was a membrane produced by the coagulation of effused blood; much serum between the convolutions, and at the base of the cranium; the cortical substance very red. The stomach natural; the small intestines contained a prodigious collection of worms; the inflammation was sufficiently intense in this part. The colon was contracted, its walls very thick, and the internal membrane much inflamed, of a dark red colour.

"Case XXX.—Joseph Maoloney, æt. about 60, came to the hospital on the 21st Sept. 1822. He had been sick for five days. His answers were so confused, it was impossible to find out what had been his previous state, further than that he said he had vomited some bitter stuff, that he was tormented by thirst, that he had suffered great distress, and had pains in the epigastrium. In the evening, tongue dry, vividly red round the edges; constipation, nausea without vomiting, heat natural over the extremities and the thorax; a burning heat in the epigastrium; anguish; severe pain in the stomach under pressure; pulse small, frequent; lavement of barley water—gum-water—fomentations to the belly. During the night, vomiting, and had a stool.

"22d, in the morning.—Pulse more expanded; the ideas still confused, diminution of agitation, heat natural every where; tongue dry, thirst. Same treatment. About half-past 9 o'clock he had vomited the tisane with mucus, bile, and several lumbrici. About half-past 11 o'clock, stupidity, pains in the epigastrium increased. At 3 o'clock P. M. lancinating pain of belly; pulse small, frequent; extremities cold, and bathed in cold, clammy perspira-

tion; inferior extremities bent up upon the belly. Bled from the arm, died in half an hour afterwards.

"Dissection.—Injection of the vessels which ramify upon the convolutions of the brain; substance of the brain presented an infinite number of small drops of blood; three or four ounces of water at the base of the cranium; lungs natural, crepitating. In the belly there were fifteen or sixteen ounces of dark blood, running like oil; spleen ruptured at its inferior part, not by a fissure as in the other cases, but presenting an opening the size of a dollar, out of which came a dark and putrilaginous substance; it was impossible to raise the spleen without breaking it, it was so diffluent; it separated in the hand into two portions, of which one when placed on the table became flattened like jelly, and the other portion remained attached to the diaphragm, which they were obliged to cut to expose the spleen completely; it was not much increased in volume. The stomach was of a reddish brown in the greatest part of its extent; inflammation of all the rest of the intestinal tube; rose-coloured within; bladder natural; liver gorged with blood.

"Case XXXVIII.—Angelo Galetti, æt. 18, of a good constitution, was brought to the hospital on the evening of the 29th July. The patients who were near him said, that during the night, he complained continually of sharp pains in the belly. Took an ounce of bark; the whole of the body was as cold as ice.

"30th, 8 A. M.—Legs, thighs, fore-arms, arms, cheeks, of an icy coldness; the belly, chest, and forehead were of rather a lower temperature than other parts of the body; pulse insensible at the wrists; I could feel it but very feebly in the crural arteries, it beat 100; the patient trembled and complained continually; his most common position was on the left side, with the thighs bent on the belly. He understood what questions were put to him, but not sufficiently well to give proper answers; he never entered into any detail; and died at half-past nine.

"Examination three hours after death.—The small intestines slightly distended with gas, were externally of a purplish red. The internal membrane was of the same colour, so that the violent injection of which they were the seat, had existed throughout the whole thickness of the substance of the intestine. This injection was recent. Inflammation of the upper half of the cæcum. The whole of the great intestine was white externally; on being opened, it presented an inflammation, the violence of which was greater towards the rectum, where the mucous membrane was so intensely inflamed, that some blood had been effused, which mixing with the mucus formed a thick coating, which adhered to the whole of its surface. The colour of all the interior of the colon, and especially of the rectum, was of a lively, intense red: in a word, the most violent degree of inflammation that can exist without disorganization. The stomach was pale; after being washed, it presented, near the pyloric extremity, an infinity of little depressions, from half a line to a line in diameter, and some of which contained in their bottom a small spot of blood, which was easily removed. The folds of the mucous membrane were, besides, nearer each other, and more numerous than ordinary. The mucous coat itself was thickened. The liver was healthy. The spleen

large and pretty hard, but of a redness of the lees of wine. Slight adhesions of the right lung; the same between the whole surface of the heart and pericardium; they were easily destroyed. Injection of the arachnoid, engorgement of the vessels which ramify on the convolutions, and of those which compose the choroid plexus.

"Case XXXIX.—Vincent Crescenzi, æt. 60, of a thin but healthy habit of body, fell sick on the 19th August 1822. He was attacked with fever, which set in with shiverings, followed by extreme heat, pain in the head and belly, vomiting of bilious matter. During the night, the paroxysm terminated in sweating. He was brought to the Hospital of Saint Esprit on the 19th August 1822. The fever returned in the morning, preceded likewise by shiverings, and accompanied by the same symptoms as in the evening; the stomach was painful on pressure; the patient experienced a great heat in the inside; anxiety; depressed countenance, the features were as if flattened to the bones of the face; the colour of the face was natural, the expression dull. (Half an ounce of bark on the decline of the paroxysm.)

"Evening.—Decline of the symptoms; skin wet with a cold clammy sweat; pulse small, frequent; general shivering; pain at the epigastrium; tongue red, but moist; no thirst. (Half an ounce of bark.)

"Night.—The skin remains moist and cool. The patient has vomited the bark.

"He had several paroxysms afterwards; became worse, and died on the night of the 23d, sensible to the last.

"Dissection.—Slight injection of the arachnoid; engorgement of the vessels which ramify upon the convolutions; an effusion of yellowish serum between the foldings of the arachnoid; cerebrum and cerebellum natural; heart and lungs healthy. Stomach grey externally and contracted. Inner surface of a bright red, deeper still towards the pylorus. Foldings of the mucous membrane better marked than usual. Small intestines grey externally and contracted. Internally their redness was brighter than that of the abdominal muscles, which afforded us a point of comparison. To give an idea of this inflammation, the colour of the large intestines could be compared to that which they would receive were they soaked in black blood. This inflammation increased as it approached the S. and the rectum; liver healthy; spleen of a middling consistence, between the state of degeneration and health. This inflammation could be compared only to that of the 30th case.

"Case XL.—Vincent Cola Paolo, of Rimini, æt. 40, of a good constitution, residing at Roma Vecchia, entered the hospital on 7th July. Had been attacked with a paroxysm of fever on the previous evening. On the morning of the 7th, his state was the following:—Hands colder than those of a dead person; pulse 108, small, contracted; hiccup regular in its returns fourteen times in the minute; position supine; sighs drawn easily; answers pretty correctly, he experiences pain in the region of the liver. In the evening, the fit declined, and the hiccup disappeared.

"On the morning of the 8th, senses completely restored, with his natural expression, which, during the paroxysm, assumed that particular aspect, which

characterises those labouring under the fever; but the hands have always an icy coldness which extends half way up the fore-arm; he is not aware of their being cold; but on placing them on his belly, he at once becomes sensible of it; he speaks as if he were in a state of health. At nine o'clock, his appearance became as if besotted; he replied with hesitation and reluctance. Has an inclination to sigh. He lay on the side, with the legs bent upon the abdomen; the fit commenced, the cold gained upon the trunk, respiration became short, some tendency to hiccup; in short he died at three in the afternoon. He took some bark during the apyrexia.

"Dissection.—General injection of the arachnoid, which is thicker than natural, red, and as if doubled by a sanguinolent false membrane; the vessels distributed upon the circumvolutions of the brain are engorged; the stomach is much inflamed in its pyloric half, the rest of the intestinal canal healthy.

"Case XLI.—Angelo Donni, of Milan, æt. 35, weak, lymphatic constitution; preparer of macaroni. On the 5th July 1822, he entered one of the grottos of Monte Testaccio, when he experienced a general sense of cold, which he attempted to shake off by drinking seven or eight glasses of wine; but could not however warm himself. He then felt a great weakness, which was the predominant symptom during the six days previous to his entering the hospital. His state had so little of a decided febrile character, that according to his account, the medical man could not tell him if he had had the fever. He had a sense of general uneasiness; took an emetic and a purgative, and returned to his work; but the general state of disease and uneasiness increasing, as likewise the weakness, on the 11th of July in the morning he came to the hospital of Saint Esprit, on foot, supported by a man on each side. Being arrived in the 1st ward, where I first saw him, he seated himself upon a form, and appeared to feel ill. He let himself fall down upon the right side, but the expression of his countenance was not that of a person fainting. There was something in the motions of his head, of his eyes, resembling those symptoms produced by drunkenness, and not that want of power occasioned by the cessation of the motions of the heart. He was merely supported, and recovered, and he was then enabled to ascend more than 30 steps, in order to reach the clinical ward. When in bed, the following was his condition; pulse frequent, weak; temperature of thighs, legs, hands, and arms, cold; tongue moist and not red. He was able to give a history of his previous state, nevertheless he begged the physician to question his companion, who accompanied him to the hospital, for although he had neither delirium, nor coma, nor syncope, he appeared so confused, so little master of his ideas, that he declined to give any account of it. All he assured us of was, that he had never had the fever. In the afternoon he was twice ill.

"Evening.—Pulse scarcely perceptible, great pains, extremities cold, the left hand more so than the right; it is of a livid colour. Temperature of the belly, and the chest, almost natural; face pale, delirium, agitation, inquietude. (Decoction of bark ℥ viij. Extract of bark, theriaque, ā ā. ℥ ij. Laud. liq. anod. camph. emuls. ā ā. gr. xx. blisters to the thighs.)

"12th July.—At half past one in the morning, sweat general and copious,

but cold. In the morning at the visit, weakness the same; pulse insensible at the arms, which are cold, as also the thighs; the belly is a little warmer, but it is also below the natural temperature; pulse at the temples 114. The blistered surface pale, no water under the epidermis, which remains only detached. He has lost no part of his judgment, but manifests a tendency to drowsiness; complains of no pain, the belly is not tender on pressure; the principal ailment is great weakness. (Blisters to the arms. Bark ℥ ij. in wine.)

"A little later, return of the same symptoms, alternating with delirium and drowsiness; general and intense sense of cold; died at half-past five in the afternoon.

"Half an hour after his death, the body was warmer than during life.

"Dissection.—Stomach highly inflamed between its great curvature and the pylorus. Intestines presenting traces of inflammation in some points. Spleen soft and pulpy, liver healthy, old adhesions of right lung. Before opening the cranium, the head was separated from the trunk, when there escaped by the occipital foramen a great quantity of bloody serum. Injection of the arachnoid in its minutest ramifications, but a little more on the left than on the right side. Great engorgement of the vessels distributed on the circumvolutions, more marked on the left side. Grey substance of the brain, of a pale, rather than of a deep hue; choroid plexus pale; serosity between the circumvolutions; brain of a soft consistence."

From these and other cases it appears, that M. Bailly found in thirty-three dissections, more or less extensive disease in the brain: in twenty-two of these there was thickening, and other marks of inflammation, in the arachnoid coat; and in eleven, inflammation of the substance of the brain. In twenty cases there was gastro-enteritis. In four cases gastritis by itself, and also four of enteritis, uncomplicated with gastritis. In eleven the spleen was softened; in some instances enlarged; one weighed from two to three pounds, and another from eight to ten pounds. In two cases the spleen was large and hardened. In three cases the spleen was ruptured, and in one it was gorged with blood. In two cases the liver was softened; in four gorged with blood; and in one case inflamed. In one case the gall-bladder was inflamed. In two cases there was pericarditis. In three, peritonitis. In one, pneumonitis. In one case there was inflammation and enlargement of parotid.

These statements respecting the appearances on dissection in Intermittent Fever, will be found fully corroborated in the

works of Morgagni, Pringle, Cleghorn, Chisholm, and Fellowes.

Causes of Intermittents.

In point of form, I ought now to treat of the causes of Intermittent Fever, but having explained myself so fully on this subject, when treating of the causes of fever in general, at page 44, it is unnecessary to do so in this place, further than to repeat my conviction, that the effects of internal irritations, sudden variations of temperature, and of evaporation, as causes producing Intermittents, have hitherto been too much overlooked.

Pathology of Intermittents.

As there are three distinct stages in this disease, it will be proper to treat of the pathological condition of the body during each.

Cold Stage.—Perhaps the first link in the chain of morbid action may be in the nervous system; there is decided evidence of its being involved from the beginning to the termination of the disease. But as there is nothing to guide us in the investigation, I shall not enter into it. The first circumstance which we distinctly perceive, is diminished circulation of blood in the extremities, then a sense of coldness, and with it a feeling of weakness. These are evidences of an irregular determination of blood, by whatever cause produced; and in proportion as blood accumulates in the vessels of internal organs,* their functions become impeded. The lungs shew their gorged state, by the short, difficult, and anxious breathing; by the impossibility of inflating them beyond the least degree; and by the violent dry cough which occasionally takes place. The livid appearance of the cheeks, lips, and

* This is the state termed congestion, which implies, that the balance between the arterial and venous systems is deranged for the time, the latter being overloaded or congested with blood, and not that the circulation in any organ, or set of organs, is entirely obstructed, which nevertheless does actually happen in those extreme cases in which re-action does not take place, and the individuals die in the cold stage.

mucous membrane of the mouth, is an additional proof of the embarrassed state of the lungs, shewing that the blood is not properly de-carbonized. The disordered functions of the brain in this stage, depend, I imagine, principally upon the gorged state of the lungs, and also upon the overloaded state of the right side of the heart, preventing the free return of blood from the head. The disordered functions of the brain may also be produced by a change in the balance of the circulation of the vessels of the head, independently of the state of the lungs and heart. The tremors may probably be attributed to an accumulation of blood in the vessels of the brain and spinal marrow. The sense of cold seems to be owing partly to the state of the nervous system, and partly to the state of the lungs. The pain in the head and loins, and oppression at the præcordia, may be fairly attributed to the same causes. The muscular prostration, and feeling of sinking, are not owing to actual debility, but to obstructed action, in consequence of the above-mentioned condition of organs. The proof of all which circumstances is to be found in the fact, now well known, that abstracting blood, in the cold stage, will immediately remove not only the difficulty of breathing, the pain in the head and loins, the disordered functions of the brain, (when these exist,) the oppression at the præcordia, &c. but will also stop the rigors, restore the strength of the pulse, increase the heat of the whole body, and cause the sensation of cold to vanish in an instant. Cullen and others believed, that all the subsequent phenomena of fever depend upon the cold stage, which, although a mere hypothesis, is now for the first time proved to be true.

The pathological views which are still taught in most of the schools of Great Britain may now be stated, and this shall be done in the words of the late very celebrated professor of physic, Dr Gregory: "The languor and debility depend upon diminished nervous energy: the uneasy feelings, on muscular debility; the paleness of the face and extremities, and shrinking of the features, are owing to spasm of the extreme vessels; the coldness is to be explained by the blood being propelled from the surface by debility, or prevented from entering the vessels by the spasm; thus the cold may

be produced either by the spasm or by the debility; the tremors depend upon debility of the muscles, but there is also some irregularity of nervous energy; the breathing during the cold stage is small, frequent, and anxious, owing to debility of all the muscles that serve for respiration, while, at the same time, the *congestion* of blood produced by the weakened action of the heart, would require the breathing to be often repeated, and the respirations to be fuller than natural, which circumstance tends to increase the uneasiness; the heart partakes also of the debility; this debility of the heart produces an accumulation of blood in the great vessels, and this occasions that unusual motion of the organs of respiration, termed yawning. Want of appetite, nausea, and vomiting, are owing to debility of the fibres of the stomach. Costiveness is produced partly by spasm. Failure of attention and memory, and also delirium, are owing to debility."

On perusing these statements, the reader will observe sufficient proof of the pathological condition of the body which I have described, but instead of attributing it to the same state of organs, he places spasm and debility as the cause of each phenomenon; thus most unphilosophically, like the rest of the disciples of the Cullenian school, he makes the facts to suit the doctrines. Influenced, as this distinguished man's mind was, by such erroneous pathology, it is no wonder that he should have pronounced the following dogma: "I have no doubt, therefore," said he, "that the causes producing fever, act first by inducing debility; and accordingly we find, that stimulants employed at this period have produced good effects in checking this disease, while evacuations, as *bloodletting*, which, at another period of the disease, might have been proper, if employed in the *first stage*, *never fail to be attended* with most dangerous consequences; or it is, to use the words of Celsus, '*hominem jugulare.*'"

I shall now show that this is a statement which Celsus never made with reference to the cold stage of intermittent. On a careful reference, I find no allusion made to such a practice in his works; but in treating of the danger of bleeding in *vehement fevers*, he expresses himself thus,—"*Quod si vehemens febris urget, in ipso impetu ejus sanguinem mittere,*

HOMINEM JUGULARE EST."—Lib. ii. cap. 10. It appears to me that Dr Gregory was led into this error by a statement made by Sir John Pringle, who, in allusion to the good effects of bleeding in the camp fever which he describes, observes at page 210, (Observations on Diseases of the Army, Ed. 1768,) "A person unacquainted with the nature of this disorder, and attending chiefly to the paroxysms and remissions, would be apt to omit this evacuation, and to give the bark prematurely, which might bring on a continued inflammatory fever. A vein may be safely opened either during the remission or *in the height* of the paroxysm; for besides that I have observed the remission to come sooner and fuller after hemorrhage, I have repeated experience of the safety of bleeding *in the hot fits;* and not only in this, but in the marsh fever, even after it had come to almost regular intermissions. In order to make Celsus's maxim (he quotes the above passage from lib. ii. cap. 10.) consistent with this practice, we must interpret his term *impetus febris* in the sense of that chillness or cold fit which preceded the hot one in the fevers which he describes, *for then indeed bleeding would be improper.*" This is straining an author's statement to suit other views with a vengeance! The meaning of Celsus is clear and precise,—he makes no allusion to the cold stage. Does not this show how liable we are to be misled by the authority of a name?

Hot Stage.—Acting upon the principle of not inquiring into occult causes, very little need be said respecting the circumstances which produce the re-action; but there has long existed a pretty general belief that the blood accumulated about the heart, in the cold stage, proves a stimulus to that organ, and produces re-action. In this manner Dr Gregory and others make the spasm of the extreme vessels the cause of the diminution of blood on the surface; and then he observes,—"The blood thus driven upon the internal parts, must accumulate in, and prove a stimulus to, the heart and great vessels."

The next question comes to be, how is this effected? The truth is, that we know nothing of the matter; and, after all, it is perhaps best to attribute it to "*the principles of life*," or,

in the language of Cullen, to the "*vis medicatrix naturæ*," which is ever in action, to prevent injury, and to remedy the evil after it has occurred. The phenomena which are ascribed to the state of re-action, are those, *the combination of which* is denominated fever; namely, hot and dry skin; quick pulse; thirst and loss of appetite; restlessness and anxiety; headache, and occasionally delirium; hurried respiration; dry, furred tongue, &c.

With respect to the heat and dryness of the skin, the old opinion of Boerhaave need scarcely be alluded to, who attributed this condition to the friction of the globules of the blood against the sides of the vessels; neither is it necessary to dwell upon the still older opinion, which attributed the heat to fermentation; nor is it requisite, after what has been previously stated in this work, to say a word more respecting spasm of the extreme vessels. The heat and dryness of the skin in the second stage of intermittent are, no doubt, owing partly to the suppression of the secretions and excretions; also, probably, to some change in the nervous system, but principally to the increased quantity of blood driven to the surface of the body.

Sweating Stage.—It has been stated, that, in cases in which no organic lesion exists, the pains and uneasy feelings begin to subside after the commencement of the sweating, and soon afterwards disappear. An interesting question here presents itself, How does the perspiration produce the effect? It appears to me that it acts in two ways; *first*, cooling the body by evaporation; and, *secondly*, it moderates the force and frequency of the heart's action, by depleting the system. It is impossible to state the precise quantity of fluid perspired in such cases; but, if I can trust the hasty, and far from accurate observations made respecting this point, by placing oil-skin on the outside of the bed-clothes, I am inclined to believe that it amounts to considerably more than two pounds; and it must be kept in view, that this discharge comes directly from the blood itself.

Treatment of Intermittents.

It was formerly a matter of high dispute among physicians,

whether an intermittent fever ought to be immediately cured, or allowed to run its course. Many believed that the system is benefited by the disease,—that the febrile symptoms, in fact, are the natural cure of some other disorder in the constitution, —and they argue that curing it must be hurtful. Some still assert that the disease will cure itself; and therefore, that it is improper to apply any remedies, except laxatives, to keep the bowels open.

The best maxim in physic is, to get rid of diseased action as quickly as possible, as there is no saying what mischief is to follow in the train of consequences. "There could not be a moment's hesitation," says Dr Fordyce, "in determining to restore the patient to perfect health at once, were there any remedy or mode of treatment that would certainly prevent the returns of the paroxysms of a tertian intermittent, and take off the symptoms remaining after the crisis, so that no other disease should follow. But there most undoubtedly is no medicine uniformly efficacious, or that always leaves the patient in tolerable health, and secure of not being destroyed by the remains of the disease, or by any other disorder arising in consequence of it."—"Were there any such, why should different practitioners attach themselves to particular varieties of bark; recommending the brown, the yellow, or the red, with such decided preference? Why should they prefer arsenic or zinc, if any one were uniformly successful?"

The discovery of such a remedy has always been a great desideratum; and although no one remedy has yet been found out, I believe bleeding, in the cold stage, conjoined with laxatives, and the occasional use of the sulphate of quinine, to be as certain a mode of treating intermittents, as any other set of remedies can be said to be certain in the treatment of any other class of diseases.

Treatment in the Cold Stage.—As the cold stage demands different management from the hot, and both of these from the sweating stage, and all these from the intervals between the paroxysms, I shall treat of the means to be used in each stage, and then describe the plan which ought to be adopted in the intervals, to prevent a return of the complaint. In the cold stage, which generally lasts from half an hour to two or

three hours, the first thing to be done is to endeavour, by every means in our power, to restore the heat of the body, and to relieve uneasy feelings, with a view to shorten its duration, and bring about re-action. Hot applications; additional bed-clothes; warm drinks; stimulants; opiates and æther, have been strongly recommended,—with how little success, every experienced man can testify. The best method of applying heat is, to surround the patient with bottles filled with hot water; and it affords considerable relief, when a sufficient degree of heat can be applied to the epigastric region. It appears to be more efficacious than the general warm bath, in which I have seen the patient shiver, and complain loudly of cold, when the bath was heated above 100°. It is a common plan to give a bumper of gin or brandy, with some pepper, to create re-action, and cut short the cold stage; and there can be no doubt that it has sometimes succeeded; but I have seen much injury ensue in many cases. This enables us to account for the horror entertained by the older writers, at cutting short the cold fit, because it was never attempted by any other means than by ardent spirits, large doses of opium, and æther. Dr Gregory used to mention, in his lectures, two cases of violent epistaxis, succeeding to doses of brandy and pepper, which reduced the patients to great weakness. In the instances which fell under my own observation, and to which I have already alluded, fever and violent cerebral symptoms succeeded, and in two or three instances, local inflammations.

Bleeding, in the cold stage, will, in a great majority of instances, cut it short; in fact, it will rarely fail in stopping the existing paroxysm, and, on many occasions, it has prevented a return of the disease to which the patients had been long subject, and by which they were nearly worn out. It is difficult to determine what quantity of blood it will be necessary to draw in any given case; sometimes it requires twenty-four ounces; I have known three ounces suffice, and, in one case, an ounce and a half produced the full effect. The larger the orifice in the vein, the greater is the chance of arresting the disease at a small expense of blood; but, in many cases, the operation is attended with considerable difficulty, from the convulsive tremors which affect the whole body. I was once

successful in arresting the disease by bleeding, in a cold stage which had continued twenty-six hours; but I regard this as an extreme case. The blood sometimes only trickles down the arm, and, as the system is relieved, the stream becomes larger and stronger, till at last it springs from the orifice, and frequently before six ounces are taken, the patient will express relief from violent pain in the head and loins, and it will soon be observed that he breathes more freely. The tremors become slighter and slighter, and, by the time a few more ounces are abstracted, they will cease altogether, and with them will vanish the painful sensation of cold. The pulse will be found stronger, and a gentle moisture will be observed on the body. If the patient be properly managed with respect to bed-clothes, neither hot nor sweating stage will in general follow. Most of the patients who have been treated by myself, or by my pupils under my immediate inspection, have fallen asleep immediately after the operation; but some have even got up and dressed themselves.

The best testimony which can be offered in favour of bleeding in the cold stage of intermittents, is to annex a condensed history of some of the cases treated by myself and others in this country. Indeed, I have been blamed by many for not having done so in the first edition, but time has enabled me to perform this duty with more confidence, for I have now the satisfaction of adding an account of the happy results of the practice in India.

"Case I.—James Ward—admitted into Royal Ordnance Hospital in November 1823. Has had several attacks of intermittent annually, since the year 1809, when he served in the expedition to Walcheren. Of late his indispositions were long, and left him more and more debilitated. He was bled twice in the hot fit, to relieve the severity of the symptoms, and with considerable temporary relief, but without preventing or mitigating the violence of the subsequent paroxysm. He was afterwards bled from a vein in the arm, during a very severe cold stage; the rigors were violent, and the sense of cold insupportable. He complained much of his head and loins, the face was of a livid colour, and the vessels of the conjunctiva turgid with blood. Pulse 100 or 105, and oppressed; breathing short and anxious, and, to use his own expression, he felt "a heavy load about his heart." When the vein was opened, the blood trickled slowly from the wound, but it soon came in a jet. When 8 ounces were taken, the rigors ceased, and he expressed great surprise at the suddenness of the relief; when 12 ounces were abstracted, he was free from all complaint, and his skin had a comfortable

moist feel. He enjoyed a good night; he had no return of the intermtttent; and his recovery was rapid.

"I had an opportunity of seeing this man daily for some months afterwards, and his constant tale was, that he "had not felt so well, or so much of a man," since he went to Walcheren. The only remedies used after the bleeding were laxatives and infusion of quassia.

"Case II.—James Atkinson, aged 33, had formerly had repeated attacks of ague. Was seized with severe rigors when on the top of the Carlisle mail, travelling to Edinburgh. The paroxysm was evidently produced by exposure in bad weather, first to rain, and then to a keen frost, with wet clothes. When I visited him in the hospital, he had laboured under the rigors for no less a period than twenty-six hours,—in truth, it was the most severe cold stage I had ever seen in any country, with severe pain in the head, back, and loins; oppression at præcordia. Warm drinks, stimulants, and hot applications, had been employed without benefit. The agitation of his body was so great, that it shook the very bedstead on which he lay, and threatened to terminate in convulsions. Tongue loaded, but moist; breathing hurried and laborious; pulse 65, oppressed; skin not below the natural standard over the trunk, but all his extremities were cold, and he complained of a sensation of extreme coldness. Fortunately, I made a good orifice, and the blood flowed in a good stream; the first pound was abstracted in three minutes, with very trifling relief, except to his breathing; but during the flow of the second pound, which occupied three minutes, he became more and more easy, and the rigor ceased completely. His body, and even the extremities, became of a proper temperature, and his skin felt moist; the pulse rose from 65 to 106; he passed a good night; had several stools during the next twenty-four hours, and was found perfectly easy next day. On the following day he was convalescent, looked well, asked for more food, and had no return of the disease.

"Case III.—Thomas Bullock, a strong healthy young man, reports that he had had the disease in the tertian form for twelve days. Attributes it to exposure to cold when on sentry in the arsenal at Woolwich. He was in the sweating stage when brought into the hospital at Leith Fort, on the 4th March 1826.

"On the 6th had another paroxysm.

"8th.—Cold fit came on at three A. M. After it had continued half an hour and was well formed, his pulse beating 84 and oppressed, a vein was opened in the arm by Mr Marshall, (now assistant-surgeon of the 87th Regiment,) in the presence of several other gentlemen. When 15 ounces of blood were abstracted, the rigor ceased; the pain of head and loins, and the oppression at præcordia, vanished; the breathing became natural; the pulse rose to 95. In half an hour after the operation, said he felt quite well; no hot fit followed; a very gentle moisture appeared on the surface, but there was no sweating stage; pulse 95.

"18th.—Was again attacked with rigors a quarter of an hour before the visit. He is now in a severe well-formed cold fit; breathing hurried and laborious; the whole body is in a tremor; tongue rather loaded; passed a bad night; pulse 120, oppressed. Attributes this paroxysm to cold when in the privy. A vein was opened in the arm, and 14 ounces of blood were abstracted before the

fit was subdued; there was no tendency to syncope; pulse 110, full, and of good strength. No hot stage; no sweating stage followed.

"19th.—Yesterday, for some time after the bleeding, he appeared free from all complaint; but towards evening was attacked with violent headache and pain in the belly. Blood was again taken from the same orifice, to the amount of 12 ounces, with complete relief, since which he has been easy and slept well; bowels slow.

"20th.—Slight chill this morning, which appeared to be cut short by a warm drink; no fever followed; passed a good night; bowels not moved.

"22d.—Had a slight sensation of cold this morning, but there was no hot stage; says he feels quite well; bowels slow.

"23d, 24th, 25th.—Reports state that he went on improving.

"26th.—Says he does not feel so well; but there has been no tendency to rigor; bowels bound.

"31st.—He went on improving in health, and without any return of the disease till this day. He was found at the time of the visit in a slight hot stage, after having experienced a slight rigor, which lasted for twenty minutes; tongue white and loaded.

"April 2d.—Had a severe rigor at 10 A. M. which was followed by fever and sweating; at 2 P. M. he was found quite free from complaint.

"His health went on improving gradually till the 25th, when he was discharged the hospital cured.

"The same individual reported himself sick on 30th May following, and was taken into hospital, after a severe paroxysm of intermittent. On his admission, he stated, that since his discharge, his health had been very good, and his strength increasing, but that he has had three slight rigors; his appearance, however, is much improved.

"31st.—Says he expects the paroxysm to-morrow morning at nine o'clock; bowels regular; appetite good.

"Was ordered to take three grains of sulphate of quinine every half hour, commencing three hours before the expected time of attack.

"June 1st.—He took six doses of the quinine; escaped the paroxysm; had no return afterwards, and was discharged on the 4th.

"Case IV.—Robert Smith, a stout man, whose health had formerly suffered from a residence in a warm climate, states, that he had had an intermittent fever five years ago when stationed at Woolwich, but has not had a return of the disease till now. Was taken into hospital at Leith Fort on the 7th March 1826, labouring under febrile action, which he said succeeded to a severe rigor; the febrile symptoms continued with disturbed sleep till the 13th day, with little variation. He was then seized with a severe rigor, attended with sensations more than usually distressing; above all, he complained acutely of his head. He was bled during the cold stage to twelve ounces, when the tremors and the other symptoms ceased at once; he soon after fell into a profound sleep, his skin having a gentle moisture; there was no hot stage.

"Escaped an attack till the 22d, when he had a severe paroxysm, followed by intense headache, for which he had leeches, cold applications, and a blister applied. He afterwards took sulph. quininæ.

"Case V.—William Macauley was admitted into the Royal Ordnance Hospital on Wednesday 31st May, labouring under a severe hot fit, attended with the usual symptoms.

"June 4th.—The paroxysm took place at 1 o'clock P. M. this day; about 12 o'clock the pulse was counted, and was found to beat 84, and oppressed; the precursory symptoms had just commenced; at half-past 12 the pulse was 66, and still more oppressed, This rigor was very severe; the tremors of his body shook the bed, and his sense of cold was insupportable, at the time that a thermometer placed under the tongue stood at 100. He complained of great oppression; pain of back and loins; difficult and hurried respiration. The rigor was allowed to be formed for 10 or 12 minutes before a vein was opened; 24 ounces of blood were then drawn, the rigor ceased, and all its unpleasant symptoms.

"He had about eight *slight* paroxysms after this, and was subsequently cured by the use of quinine.

"Case VI.—Alexander Clark, a stout well-made young man with a florid complexion.

"Came into hospital at Leith Fort on 26th May 1826, with the fourth paroxysm upon him. He was attacked at 7 A. M. with rigors; the fit was very severe. The hot stage had given way to the sweating when I saw him. He could assign no cause, except that he had done duty at Woolwich a few months before. Tongue foul; fever diet.

"23d.—Was free from complaint yesterday; had six stools from the laxative. The rigor came on this morning at half-past six, and went through the regular stages with the usual distressing symptoms. Tongue much loaded; B. regular; no appetite; urine scanty.

"Experienced severe paroxysms on the 24th and 26th, attended with headache and a severe pain in right hypochondrium.

"28th.—Rigor came on at 11 A. M. Five minutes after it was well formed, a vein was opened, but the operation was badly performed, owing to the violent tremors; 20 ounces of blood were slowly drawn, when the rigor ceased, together with the tremors, the difficulty of breathing, the oppression at præcordia, and the headache, &c. The painful sense of cold gave way all at once to a pleasant feeling of heat, and the pulse became natural. The bleeding was not carried the length of producing syncope. No hot stage followed, and the skin was covered with a gentle moisture. In half an hour his only complaint was of slight nausea.

"He had several slight returns of the disease, and ultimately recovered under the use of quinine.

"Case VII.—Mr Marshall, assistant-surgeon of the 87th Regiment, when on a visit in the west of Scotland, was called to see a middle-aged man who had served in the army in a warm climate, and who had suffered most severely for some years from intermittent fever. Every kind of remedy had been tried in vain, and he gladly submitted to the treatment of bleeding in the cold stage, which Mr Marshall had seen so successfully performed in similar cases.

"12th.—The cold fit is very severe; the feet cold; heat of the superior extremities rather above the natural standard, and moist; pulse very small, not easily perceived; pain of head excessive; great thirst; pain in back consider-

able; complains of distressing sense of weight at the præcordia. A vein was opened, and the blood trickled down the arm, but shortly came in a full stream. When 10 ounces of blood had flowed the shivering ceased, and all the bad symptoms vanished. Half an hour after the bleeding, says he is quite well. On the 14th, 16th, 18th, no return of fever." Mr Marshall assured me that he had no return of the complaint when he last visited him, which was several months after the bleeding, and that the cure seemed to be as sudden, and apparently as permanent, as that which took place in Ward's case.

"Case VIII.—George Scott, aged 36, a native of Eyemouth, was seized with an intermittent of the quartan type when in Lincolnshire in August last. He had used various remedies, and among the rest bark, without relief. The paroxysms have continued with such regularity, that he has not escaped a single attack since the commencement of the disease. His health and strength have suffered so much, that he has been unable to work for a considerable time, and came to Edinburgh almost in despair, to seek relief. His look is meagre and emaciated; and he appears the wreck of a strong and active man.

"On Thursday 28th December 1826, at 2 P. M. the rigor commenced, and when it had continued for half an hour, I opened a vein in the arm, having placed him in the sitting posture; his whole body was affected by violent tremors, his teeth chattered; he complained of intense cold; dimness of sight; severe pain in the back part of the head, and in the left side, loins, and inferior extremities; his pulse was quick and fluttering, so as not to be counted, and the countenance expressed great suffering. Owing to the violence of the tremors, a bad orifice was made in the vein, and the blood flowed slowly. When about twelve ounces were abstracted, the rigors diminished, the uneasy feelings began to subside; and by the time 16 ounces were taken, he was free from tremor and pain, and said he felt quite well. The pulse was now a good pulse, but I neglected to make a memorandum of its number at the time. He showed some tendency to syncope before the arm was tied up. Several gentlemen were present when the operation was performed. He was again visited in an hour, when he was found breathing naturally, in a calm sleep. Pulse 84, and of good strength. I was told he had been very faint, and had vomited immediately after we had left the house.

"Saturday 30th.—He came to the dispensary at the visiting hour, and said that he felt himself 'a new man.'

"Sunday 31st.—He came to the dispensary again, and was there seized with a paroxysm a little after the hour of visit. The fit was preceded and accompanied by much slighter pains and general disturbance than in any former attack. In about ten minutes after the fit could be said to be well formed, the rigors were very severe, the tremors violent, and the feeling of debility was so overpowering, that he declared he could not support himself longer on a chair; his breathing was quick and laborious, and his teeth chattered; I tied up his arm and opened a vein, and before *three ounces* were abstracted, the paroxysm ceased, and with it all the other unpleasant symptoms. Although a minute before he had declared that he could not sit up a moment longer from debility, yet he now said he felt his strength restored, and had no wish to lie down; in less than ten minutes, I had the pleasure of seeing him running home. There was no subsequent heat of skin, and no sweating; his pulse, before he left the dispensary,

was 86, and of good strength; whereas before the bleeding, it was 100, and so weak as scarcely to be counted.

"Monday, 1st January.—I sent to inquire how my patient felt; the messenger was told that he had had a good night, and was out making merry with some friends.

"On Wednesday he had a slight chill without subsequent fever or sweating; he afterwards got the sulphate of quinine, and had no more of the disease.

"Case IX.—A woman, 27 years of age, the mother of several children, experienced repeated paroxysms of irregular intermittent for several months, till at last her general health became much impaired under the disease in the tertian form. She was bled by Mr Drever, one of my pupils, towards the termination of a slight cold stage. About 12 ounces were abstracted; neither re-action nor a sweating stage followed; and there has since been no return of the complaint, although several months have elapsed. She had neither bark, sulphate of quinine, nor arsenic. In fact, no medicines were prescribed but those of a laxative nature.

"Case X.—David Lambert, ætat. 36, sailor, residing at No. 9. Couper Street, North Leith, states, that he was attacked with intermittent for the first time on the 9th May 1827, when on his voyage from Bourdeaux, in the ship Enterprize of Newcastle. At the time of attack they were off Dover in very bad weather, ten days from Bourdeaux. Since then the paroxysms have returned daily, the cold stage continuing for three quarters of an hour, often for upwards of an hour. It has always been severe. His general health soon gave way. He left the ship, disabled, and arrived in Leith on the 30th May. When I visited him, he appeared to be very unwell, feeble, feverish, restless, and anxious about his fate; fearful of the consequences of the approaching cold stage, which he expected in a few hours. Says he sleeps little; has constant thirst and diarrhœa; pulse 100; tongue white and loaded, but moist; has a bad cough with expectoration; slight difficulty in breathing; and constant dull pain in the chest and loins; appeared debilitated; lies much in bed, and when he sits up complains of swelling of the feet and legs, which are œdematous; stethoscope announced bronchitis generally in both sides of the chest. The captain of the ship gave him something in treacle, which he supposed to be bark. Mr Henbest and Mr P. Mackintosh, two of my pupils, volunteered to watch the case, with a view to bleed in the cold stage. The remainder of the history is taken from their report.

"'June 7th.—Found him very unwell; coughing incessantly and violently; complaining of sense of weight in the chest; pain of head and giddiness; cold extremities; pulse 95, and oppressed. At 20 minutes before 8 P. M. he was seized with rigors, which soon became very severe. The breathing was hurried and laborious; his cough and other symptoms greatly aggravated. The whole body was in violent agitation, and his teeth chattered. When in this state, a vein was opened in the right arm, and four small tea-cups of blood abstracted, (about 16 ounces.) He was so suddenly and so perfectly relieved, that he declared he felt quite well, his body became warm, and he soon fell into a quiet slumber. Pulse natural. After regulating the quantity of bed clothes, we took our leave.'

" ' 9th.—By account had a very slight chilliness last night; the whole paroxysm being of short duration; there was scarcely any heat, and very little perspiration. In fact, he said there were none of the bad attendants of the previous attacks. He was again visited at 9 P. M. and found in the cold stage, which lasted only ten minutes. The shivering was so very slight, as scarcely to be perceptible. Passed a good night; was able to sit up a considerable part of the day; strength improved to his own feelings. The cough still continues with the expectoration. Passes dark and fetid stools. Calomel and rhubarb. A blister to the sternum. Milk and farinaceous diet.

" ' Had an attack on the 10th, and another very brief one on the 11th; from which date till the present day, June 29, there has been no return of the disease. There is no affection of the chest; his aspect and motion bespeak health, and his strength is perfectly restored, without the use of bark, quinine, or arsenic.' My reporters state, that on the 19th, the patient expressed himself in the following terms: " If any man had told me, twelve days ago, that I should be so well as I am now in six months, I could not have believed him."

" Case XI.—Corporal Geo. Webster, Royal Artillery, has served thirteen years, three of which were in the West Indies, where he enjoyed excellent health; but since his return, has shewn a tendency to chest complaints; has been once in this hospital with a bad catarrh, from which, however, he recovered. He presented himself again at the hospital at Leith Fort this day, June 24, 1827, and stated, that he had for some days past suffered from rigors, alternating with flushes of heat, and attended by pain in the loins and belly, diarrhœa, and slight nausea. His pulse was quick, and tongue loaded. He got an emetic, and daily laxatives, and was discharged on the 29th, supposed to be cured. He re-appeared on Thursday, 5th July, and reported, that since his discharge on 29th *ultimo*, he had experienced three regular paroxysms of intermittent, with a day intervening; the last attack was this morning. The cold stage was very severe, and continued for two hours; it was succeeded by the hot fit, and terminated in sweating. Complained much of general pains, but suffered distressingly from headache during the paroxysm. He got nothing but laxatives; and had attacks on the 7th, 10th, 12th, and 14th. He escaped from the 14th till the 20th, when he had a very violent paroxysm; and on the 22d, he was bled in the cold stage, and the following report was made at the time: The cold fit is severe, accompanied by violent pain in the head and belly, and oppression at præcordia, head 95°, pulse 105, weak and irregular, respiration hurried and difficult. When the cold fit had continued for ten minutes, a vein was opened; the blood trickled down the arm at first, but afterwards came in a good stream. When about eight ounces of blood were taken, the pains every where ceased, the tremors became slighter and slighter, and were completely stopped before sixteen ounces were abstracted. He then felt a slight tendency to syncope, and the arm was tied up. He spoke much of the sudden and complete relief he had experienced, and contrasted his present situation with the pains and oppression he had had in previous paroxysms, which always continued till the sweating stage had gone on for a considerable time. His pulse now beat 75, strong and full, heat 100°. No hot or sweating stage followed the bleeding. Four hours after the bleeding, he was again visited: pulse 110, of good strength, skin hot

from pressure of bed-clothes, which were now carefully removed, to his great relief.

" 23d.—Says he has not been so well since first attacked ; feels, if any thing, rather stronger, slept well, bowels open, appetite pretty good, and had no return of the disease. Had no medicines but laxatives and infusion of quassia.

" Case XII.—Bombardier James Armstrong, aged 19, is tall, spare, and pale ; says he always enjoyed good health till fourteen days before he left Woolwich, when he was seized with intermittent fever. After the first fit, he had no return for nine days, which he attributes to the use of bark, which was prescribed for him in the General Hospital. But when taking the bark, and while yet in hospital, he was again attacked, and had a paroxysm every day for four successive days. He still continued to take the bark in the intervals. He was removed from the hospital on Wednesday the 11th July, to embark with his company for Leith Fort. He escaped a paroxysm on the following day, but had one on Friday the 13th, and every day since.

" 20th July 1827.—Presented himself at the hospital at Leith Fort, this morning. States, that the paroxysm came on at 7 A. M. which was very severe, particularly in the cold stage. Says he suffered most from headache, and a trembling feeling, together with a tightness at his breast. Feels now considerable prostration of strength ; has no appetite, tongue white, not much loaded ; thirst ; bowels have been very open for four or five days ; pulse 100, and full.

" 22d.—Paroxysm came on at 7 this morning. Was bled in the cold stage, after it was well formed. He says the fit was very violent, and that his sufferings were produced by severe pain of head, difficulty of breathing, and tightness across the chest. Pulse so quick, irregular, and small, as not to be counted. When about an ounce of blood was abstracted, he felt much relieved ; immediately afterwards the rigor ceased suddenly, the sense of cold gave way to a comfortable feeling, and all the other painful sensations vanished ; and not more than eight ounces of blood were drawn. In the course of a quarter of an hour, said he was sensible of a little heat and slight thirst. Was visited four hours after the bleeding. Says he feels quite well, and declares he never felt so well, or so free from uneasiness in so short a time after any previous attack, and that he has no feeling of debility, which he used to have. Heat under the tongue in the cold stage was 105° ; heat taken at this visit 100, pulse 76, full and strong. Has had no stool to-day.

" 23d.—At twenty minutes before eight this morning felt a slight chill, succeeded by a flush of heat, but, to use his own words, he had "*no fever to speak of ;*" no sweating, and he was not ill above three quarters of an hour ; in former paroxysms, the cold fit alone lasted two or three hours, and the whole attack occupied five or six. Says he now feels uncommonly well. Appetite much improved. Took a laxative.

24th.—Slept well, had a slight sensation of cold this morning, but no fever or perspiration. Physic operated thrice.

25th.—Feels better and stronger. Slept well, but perspired copiously during the night. Appetite very good. Bowels regular. At the same hour this morning he experienced a slight sense of cold in his loins, but there was no general chilliness, and no heat followed.

" 26th.—Had another slight sense of cold at the same hour this morning,

but no heat or perspiration followed; strength and appetite improved; bowels regular; slept well.

"27th.—At the same time this morning was sensible of a feeling of lassitude, but no chilliness.

"August 3d.—Continues well. Discharged, to attend as an out-patient

"10th.—Came to hospital during the hour of visit in a very severe cold stage, which had been on him for about half an hour. He complained of intense pain of head, as if some one had been beating it with a hammer, accompanied with pulsation. The tremors were violent and universal; the surface rather cold, the extremities very cold; pulse 140, and oppressed; heat under the tongue 97° breathing hurried and oppressed, and when he attempts to take in a full inspiration, by desire, he finds it not only impossible, but makes much complaint of a pain in the left side of the chest, in the region of the heart. A vein was opened, and before four ounces of blood were drawn, the rigor diminished in violence, and the pain of head became relieved; after the loss of eight ounces, the head was quite free from pain, and the tremors subsided; the heat of his extremities was restored, and a general warm glow was felt over the whole body. When eleven ounces of blood were abstracted, he was found to be free from complaint, and the arm was tied up. Heat under the tongue at this moment 107°, and the pulse beat 126, and very full. The bleeding occupied five minutes. In about ten minutes after the bleeding, the headache became so intense that he entreated to lose more blood, and eight ounces were taken with complete relief. This quantity was discharged in three minutes. His body was now universally warm, indeed rather hot; the additional blankets were removed, and he felt afterwards cool and comfortable. Pulse 120; feels drowsy.

"11th.—In an hour after the second bleeding yesterday, the headache returned, but in a much slighter degree; it was completely relieved by the application of cold water. Passed a good night, had a copious perspiration towards morning. Feels now quite well; has no pain, and says he does not feel weak. Appetite good. Had three stools last night, and one to-day.

"17th.—Has continued to improve since last report. Has had no return of the disease, and is discharged to attend for a few days as an out-patient.

"Case XIII.—John Loyd, aged 20.—Has been eleven months in the service, and was three times in hospital at Woolwich with intermittent fever.

"July 27, 1827.—By account, he had regular paroxysms of tertian intermittent lately on the voyage from Woolwich to Leith Fort. When he presented himself at the hospital to-day, his countenance was much oppressed, and his gait tottering. Says he has had a rigor all night on guard, and that he has felt cold for the last twenty-four hours. Complains much of headache, pain in the loins, general uneasiness, and difficulty in breathing. Heat under the tongue 100°; thermometer held in the hand 78°. The feet and legs also cold to the touch. Pulse scarcely to be felt, and not to be counted. He appears to be between the cold and hot stage, the cold predominating, with so much congestion about the heart and larger vessels that re-action is prevented. Upon this view of the case a vein was opened, and although a large orifice was made, the blood only trickled down the arm, which was proved to depend on a want of sufficient force in the circulation; for when the orifice was pressed by the finger, so as to stop the flow of blood for a moment, allowing time for the vein to fill, a stream took place on

the removal of the pressure; this was repeated a number of times, and with the same effect. The blood itself was thick, and coagulated imperfectly; it looked of different tints. Twelve ounces of blood were taken in fifteen minutes. The patient felt somewhat relieved after the bleeding, and complained of debility.

"28th.—Became very hot and restless in an hour after the bleeding, but has had no perspiration. Passed a bad restless night, with headache and sore throat. Pulse 106, distinct and easily compressible. Skin hot. Thermometer placed under the tongue 102°; held in the hand 99°. On looking into the throat, there appears to be no inflammation. Breathing almost natural. Is affected with slight startings. A vein was opened in the arm, and although a large orifice was made, the blood only trickled, and presented the same black appearance as yesterday; as soon as four ounces were taken, a small jet took place, which increased at last to a tolerable stream. The arm was tied up on the approach of syncope, when eight ounces were abstracted. Expressed himself much relieved by the bleeding, particularly with regard to his head. Heat under the tongue after bleeding 100°. Feels disposed to sleep.

"Vespere. Complains of headache, heat of skin, and considerable thirst. Pulse 100, and strong. Blood drawn in the morning has not separated any serum; it is like treacle, and, together with that taken at last bleeding, has all the appearance of what the old writers called "dissolved putrid blood."

"29th.—Feels better in every respect. Slept well. No stool since yesterday morning. Pulse 100, less oppressed. Heat natural. Tongue rather foul, and dry at the tip.

"30th.—Continues to feel better, and to sleep well, but complains of weakness. Three stools. Pulse 92, of good strength; great thirst.

"31st.—Complains of general uneasiness, sore throat and difficult deglutition; also of a pain in the epigastric region. He attributes these symptoms to the solution of the tartrate of antimony, which he has been taking for two or three days. The throat looks inflamed, the fauces and uvula being covered with a thick viscid exudation. Tongue dry, red round the edges and at the tip. Skin hot. Pulse 100. Thirst considerable. Bowels opened twice. Abdomen to be fomented. Antimony to be discontinued. A small dose of castor oil. Blister to the throat.

"August 1st.—Passed a bad night; but the restlessness and the troublesome symptoms described yesterday began to decline towards morning, and he now feels considerably better. Tongue moist, but discoloured and dry in the centre, and in a small angular space at the tip. Skin hot and dry; pulse 98; three stools; blister rose well, and relieved the throat.

"3d.—Slept well the last two nights; feels better in every respect; but complains of his tongue, which is fissured; it is cleaner and quite moist; thirst diminished; skin rather warm; one stool yesterday, and two to-day; pulse 80, of good strength; appetite improving.

"7th.—Convalescent; and able to sit up. He continued afterwards to make a good recovery.

"Case XIV.—John Boyd, aged 23. Was lately quartered at Woolwich, during a period of nine months, when intermittent prevailed, but he escaped the disease. Was seized last night, October 25, 1827, about twelve o'clock, after retiring to bed, with cold shivering, giddiness, and difficulty of breathing,

which continued for three hours with great severity, and then became mitigated, but did not entirely cease. In a few hours afterwards, the rigors with the other symptoms recurred with increased violence, and continued so until I visited him at ten o'clock on the morning of the 26th October. He had no sleep during the night. Was still shivering violently, and walked to the hospital with great difficulty from extreme weakness, and his gait was like that of a drunken man. After he was placed in one of the wards, the extremities were found to be cold; heat under the tongue 95°. Respirations 38, and performed with an effort. Pulse scarcely to be felt at the wrist, beating 65. He complains of an insupportable sense of coldness; of excruciating headache between the temples; difficulty of breathing; oppression at the chest, and debility. A vein was quickly opened; the blood did not flow readily at first, although the orifice was well made. When about five ounces of blood were abstracted, the respiration was performed with more ease, the pain of head was less, and the tremors were slighter. The blood now began to flow in a better stream, and when ten ounces were taken the patient declared he had no complaint, but giddiness and a sense of faintness. Hitherto he had been in the sitting posture, but was now placed in the recumbent, and the arm was tied up. The space of time occupied by the bleeding was two minutes and a half. The pulse was much stronger, beating 96. The thermometer placed under the tongue rose to 99. In the course of five minutes afterwards, a slight rigor supervened, with a return of the headache; and as the pulse was strong and firm, the blood was again allowed to flow from the same orifice to the extent of six ounces, with complete and permanent relief. He now felt "comfortable," to use his own expression. Pulse 80, of good strength. Had a drink of warm gruel, and in a short time a slight moisture appeared on the surface of the body.

"Vespere.—The patient was found sitting up dressed. Said he did not feel weak, and that he had been very comfortable since the bleeding. Surface moist. Pulse 80, strong.

"27th.—Passed a good night. Had some perspiration. A laxative powder which he took last night operated five times. The report on the 4th November states, that he feels quite well, and as strong as ever he did. Appetite good. Sleeps soundly. Bowels regular without medicine, and he has had no return of the disease since the bleeding, and on that day he was discharged the hospital.

"Case XV.—John Rose, aged 22. Was always healthy till he had the ague at Woolwich, for which he was in hospital twice, three weeks the first time, and a month the second; but says he has since scarcely ever been free from pain of head and loins.

"October 29th.—After having experienced several attacks since the 16th October, was seized with a paroxysm between two and three o'clock this morning. At ten he was still in the cold fit; he complained of pain in the head and loins. The tremors were not violent. Tongue rather loaded, but moist. Pulse 64, weak and oppressed. Heat under the tongue 92°; in the hand 72°. A vein was now opened, and he was quite relieved before six ounces were abstracted, and the tremors ceased when twelve ounces were taken, which occupied three minutes of time. The thermometer was now again placed under the tongue, and the heat found to be 96°; in the hand 75°. There had been no application of heat, nor had any warm drink been given. There was a slight moisture over

the surface. Upon being asked if he felt weaker since the bleeding, replied, that he is "not aware of feeling weaker."

"30th.—Was quite comfortable after the bleeding yesterday, so much so, that he dressed himself and sat up all the afternoon, and ate a good dinner. Slept well. Bowels open. Tongue clean. Pulse 64, and of good strength. Thinks he feels rather weaker than he did yesterday afternoon, but says he has no complaint.

"4th November.—Continues to improve in health. Has had no return of the disease, and was discharged the hospital in the course of a week cured, having used no medicines but laxatives.

"Case XVI.—Gunner James Anderson, aged 20. Has been four years a soldier. Served in the Mediterranean for eighteen months. Had several attacks of intermittent, for which he was taken into hospital in one of the Ionian Islands; and since his return to England had two different returns of the disease. He describes his sufferings to have been always very acute during each paroxysm. Has otherwise enjoyed good health. Appears to have a good constitution, and with the exception of a yellow tinge, looks healthy. He is stout, well made, and about five feet ten inches high. By trade a weaver. A native of Glasgow.

"3d April 1828.—Presented himself this morning at the hospital at Leith Fort, labouring under all the usual symptoms of inflammatory fever, and complaining much of pain in his head and loins. Thirst is urgent. Skin hot and dry. Pulse 130, full and hard. Hard cough. Stated that he had been attacked about day-light with severe cold shivering, which, after continuing for several hours, terminated in a state of heat and fever. In the course of a few hours after admission, perspiration came on, and the urgent symptoms gradually declined as usual.

"4th.—Passed an indifferent night. Complains of cough, with which he says he has become affected since his arrival at this station on the 12th March last; that it becomes much worse as soon as he begins to shiver. After the paroxysm is over, a slight expectoration takes place, which relieves the cough till the next attack.

"The paroxysm of yesterday was the fourth, with a day intervening between each. He is aware of the nature of the complaint, and says it is the same he had in the Ionian Islands and at Woolwich.

"Continued in the same state, having a severe paroxysm every third day till the end of the month, when he complained of more than the usual sufferings. His skin became of a bright yellow colour, and he was relieved by vomiting a large quantity of bilious matter.

"The attacks still continued; they have anticipated the usual time by several hours, so that the different gentlemen who went to the hospital to bleed him in the cold stage, were either too soon or too late, and no one was fortunate enough to drop in at the time, till Mr Drever remained in the hospital all night, and he was then bled in the cold stage. The following account was written by that gentleman.

"'I was called at half past one A. M. May 10th, to see Anderson, soon after the commencement of the cold sensations. At two o'clock, after the rigors had been violent for about a quarter of an hour, I proceeded to bleed him. The

thermometer placed under the tongue stood at 95°. The pulse beat 130 and weak, so as to be counted with difficulty. A large opening was made in a vein, but the blood only trickled; being afraid that the opening had not been properly made, I tied up the opposite arm and made a good orifice in another vein, but the blood still only trickled; and as the rigors continued very violent, I gave him nearly a wine glassful of spirits; and in a minute or two, the blood spouted in a large stream, and thirty ounces were quickly evacuated, when vomiting and a tendency to syncope took place. The tremors had entirely ceased, and all the unpleasant sensations. The patient expressed, in strong terms, the ease which had so suddenly been produced. In five or six minutes after the arms were tied up, the tremors returned for a few minutes, and then entirely subsided. Pulse 100.

"'I visited him again at the end of six hours, when he told me he had slept very comfortably. Pulse 70. Upon being asked to state the extent of the relief he experienced from the bleeding, he told me that there was a load taken from his breast and head, and no painful feeling was left.'

"At two regular periods since the bleeding, he was conscious of feeling heavy and sleepy, but had no tendency to rigor, or even to feel cold, although the weather has been exceedingly changeable, and for the most part cold, the wind easterly. He has no kind of medicines but laxatives to keep the bowels comfortable.

"Case XVII.—Gunner Robert Young, aged 42. Was in hospital for several months during the winter, complaining of pain in the chest, cough, and copious expectoration, together with emaciation, prostration of strength, and heavy night sweats. For four or five weeks, the expectoration was bloody, and amounted on an average to about three gills a-day. His pulse was never under 100. The sound of respiration on the right side of the chest was deficient, while it was puerile in many parts of the left lung, and there was no *râle* to be heard any where. Contrary to expectation, he became much better under the use of considerable doses of the acetate of lead; and contro-irritation, produced by tartar-emetic ointment, on the surface of the chest. When his recovery was considerably advanced, and in order to give him the best possible chance, he was sent on furlough to his native place; and when there, was seized with intermittent fever, which induced him to return before his leave had expired.

"After having experienced many severe paroxysms, he was taken into hospital, at Leith Fort, and on Sunday the 18th May 1828, the following report was made.

"Felt the cold fit coming on at half-past twelve this forenoon. In a quarter of an hour the tremors were so violent as to shake the bed. From the commencement of the cold fit, he coughed incessantly, without expectoration, and complained of excessive coldness, together with pain in the head, chest, belly, and back. Heat of the room 65°. Thermometer placed under the tongue 90°; held in the hand it fell to 76°. Pulse 75, and very weak. After the rigors had continued with violence for ten or twelve minutes, a vein was opened. The first cup, which was filled in five minutes, held twelve ounces; by the time it was half filled, the pain had vanished from the head and chest, the cough had ceased entirely. When the cup was filled, he said the pain had now left the back, and that a very warm, pleasant sensation, was gradually spreading from his back over his bowels and breast. The second cup held between eight and nine ounces;

it was filled in two minutes. The blood flowed with more force, but not in so large a stream. The tremors gradually subsided, and all unpleasant sensations disappeared before the arm was tied up. The breathing was easy and natural. Heat under the tongue 93°. Pulse 92, of tolerable strength. There was no sense of sickness, or tendency to syncope. He was again visited in twenty minutes, and found quite comfortable. In the evening he continued quite well, but had a little heat of skin, which was found to be owing to the great number of blankets he still had upon him. Upon their removal the heat disappeared. As he had had free motions from his bowels through the course of the day, no medicine was ordered.

"Had a slight paroxysm on the 20th, and another on the 22d, after which quinine was exhibited, which appeared now to have the effect of preventing a recurrence of the disease, although it had been exhibited in vain, and in much larger doses, before the bleeding.

Case XVIII.—The following is the case of James Bennet, treated by Dr Alison in the clinical ward of the Royal Infirmary, which was the foundation of his lecture against bleeding in the cold stage, and whose objections and arguments were subsequently re-echoed in the Lancet of Saturday, April 7, 1827, in a communication signed "*Scotus.*"

"James Bennet, aged 39, shoemaker, March 27.—Had severe rigors on Saturday 25th instant, accompanied by thirst, anorexia, and pain of head, which continued for more than an hour; were then succeeded by heat of skin, vertigo, lassitude, increase of thirst, and pain of head. These symptoms continued five or six hours, and then gradually subsided during copious sweating. Had a similar paroxysm on the 26th, and also a less severe one this morning. Complains at present of slight pain below the left false ribs, somewhat increased by pressure or coughing. Pulse 60, full. Respiration natural. Skin cool. Tongue clean and moist. No thirst. Appetite pretty good. Bowels open. Urine said to be high coloured. Lips somewhat swollen, with a slight vesicular eruption around the mouth. Has taken purgative medicines, and also a little of the arsenical solution, since yesterday. Took an opiate draught this morning when the rigors commenced, after which they continued only a few minutes. Has since had no pain of head; little heat of skin; less thirst, and no sweating. Had the intermittent fever more or less constantly for nine months whilst in Spain, fourteen years ago. Has recently returned from the West Indies, where he resided for the last six years. Lives in a house where several persons have been ill of continued fever.—Fowler's arsenical solution, ℥ i. Water, ℥ vi. Mix. Let him have ℥ss every sixth hour.

"28th.—Shivering commenced this morning at ten, which abated somewhat after taking the draught. At half-past ten was still shivering, less violently; with pain of back and head. Pulse 72, rather small. Sixteen ounces of blood were taken, slightly sizy, crassamentum not contracted. *The pains abated, and the shiverings immediately ceased.* Has headache now, and giddi-

ness. Pulse 72, full, soft; tongue furred, moist. No sweating since the shivering. Pain of the left side of abdomen only felt on coughing. No pain of back.—Continue the arsenical solution. Repeat the anodyne draught.

" 29th.—Began to sweat at two, which lasted several hours. Had griping and tenesmus with headache at night, which abated after the operation of a dose of castor oil. No shivering to-day. Four doses of the solution taken. Pulse 60. Tongue moist, slightly furred. Complains of weakness.—Continue all the medicines. Let him have lb. i. of beef tea, and one pint of porter.

" 30th.—Had a fit of rigors this morning about ten, and took his draught. The shivering was less violent, but lasted an hour. Pulse 80, full, soft. Heat was an hour ago 100°. Tongue slightly furred, with thirst. Complains of headache, pain of back and left side of abdomen. Bowels confined. —Let him have one oz. of castor oil; a saline draught now and then. Continue the others.

" 31st.—Much sweating yesterday after having had an enema at night without effect. No rigors to-day. Pulse 68. Tongue whitish.—Let him have ℥ ij. of Infusion. senna, with ℥ ij. of sulphate of magnesia.—Repeat the arsenical solution now every fourth hour.

" April 1st.—Bowels freely opened. Rigors commenced to-day at ten, but slightly. They have become more violent within these few minutes. Pulse 84, pretty full. Skin feels warm. Tongue rather dry. Has pain of left side of abdomen just now. He has just taken the anodyne draught.—Continue the arsenical solution. Give him a powder containing four grains of sulphate of quinine every six hours.

" 2d.—Shivering abated quickly after the opiate draught. Sweated much in the evening. Feels easy to-day. Left side of abdomen slightly tender. Bowels open. No nausea.—Repeat the powders of sulphate of quinine every fourth hour.

" 3d.—Four powders taken. No fit. Very little pain of side.—Continue the medicines.

" 4th.—Five powders taken. No fit. Two stools. Appetite good.—To have four ounces of steak to-day, and daily.

" 5th.—Had a very slight fit of rigors at four yesterday, succeeded by heat of skin; full, quick pulse, and sweating in the night; little headache, and no pain of side. Pulse and tongue natural. Bowels open.—Continue.

" 6th.—Shiverings have begun within these few minutes. Pulse 96. Has taken his draught. Hand rather cold. Bowels open.—Continue.

" 7th.—Shivering lasted an hour yesterday. Began to sweat soon after, and sweated all night. Complains of pain in the left lumbar region, with some tenderness; no distinct hardness.

" 8th.—Rigors commenced this morning a little after 9 o'clock, and lasted an hour, though he took an opiate draught containing forty drops of tincture of opium. Has sweated some already. Pulse 100, full. Complains of headache and pain of left side of abdomen. Tongue rather dry, with some thirst. No stool.—Let him take a bolus of compound powder of jalap directly. Apply the cupping glasses to the pained part of his left side, and abstract six ounces of blood. Continue the powders of sulphate of quinine. Let him have drink, acidulated with lemon juice, without syrup, *ad libitum*.

" 9th.—Side easier since the cupping. Bolus operated. No headache to-day. Appetite good. Much sweating in the night.—Continue. Let him take a mixture containing ℥ i. of sulphuric acid with water.—Additional bread.

" 16th.—Had some vomiting this morning, succeeded by rigors about 9 o'clock, which lasted three quarters of an hour, but were not violent. Pulse 64. Heat 99°. Sweated a little. No headache or pain of side. Bowels slow.—Let him take ℥ ij. of infusion of senna, with ℥ ii. of sulphate of magnesia, directly. Continue the others.

" 17th.—Had a second fit of rigors yesterday at 2 o'clock, which lasted long, although he took forty drops of tincture of opium. Sweated all night. Is free from complaint to-day, but weak. Bowels open.—Continue the powders of sulphate of quinine every third hour.

" 18th.—No return of shivering. Has a little pain of left side of abdomen, on motion or coughing. Pulse natural. Appetite good. One scanty stool.—Give him directly a powder containing g^r xv. of rhubarb, and g^r iii. of calomel.

" 27th.—Complains of feeling weakness of loins.—Apply a warm plaster to the lumbar regions.

" 29th.—Bowels slow, otherwise well.—Let him have immediately a cathartic draught. Continue the others.

" 30th.—Has complained of nausea and weakness, but without any shivering. Pulse natural. Tongue whitish.—Let him take ℥ i. of a mixture containing ℥ ij. of ammoniated tincture of valerian, in ℥ vi. of mint water. Continue the others.

" May 1st.—Feeling of nausea and headache abated. Bowels regular.—Let him have one ounce of bark, also a warm plaster for the loins. Dismissed cured.

Second attack.

" Admitted 25th May.—On the morning of 17th instant, was taken ill with headache, languor, and pain of back, succeeded by slight rigor, which continued for about a quarter of an hour, when it was followed by heat and sweating. Has had an interval of seven days without a return of paroxysm, which re-appeared on the 24th with increased severity, the rigor having been much more violent, and of longer duration, accompanied with much nausea, excruciating headache, and those various symptoms which characterise the invasion of intermittent fever, under an aggravated form. Has had this morning, previous to admission, another paroxysm, which was an hour earlier in the period of its accession, and continued, including its three stages, for about six hours, during the first of which he had much vomiting. Complains most at present of headache, prostration of strength, general lassitude, and soreness of limbs. Has no pectoral or abdominal symptoms; thirst is urgent; no anorexia; pulse 66, full, but soft; respirations 26 in the minute; tongue furred, but moist; bowels open; skin warm, rather pungent, and bathed in perspiration; face swollen; urine copious. Has been lately a patient in this clinical ward, afflicted with his present complaint, of which he was dismissed cured, on the 30th ultimo. The history of the present case

derives much additional interest from the circumstance of two of his children having been also recently attacked with ague, for which one of them is now a patient in the Infirmary.—Let him have g^r iij. of sulphate of quinine three times a-day, and two colocynth pills to-night.

" 26th.—Three stools from the pills. No shivering since admission. Headache still severe. Pulse 66, full. Pain of back and limbs preventing sleep. No pain of side or of abdomen.—Apply the cupping instrument to his temples, and abstract eight ounces of blood.—Continue the powders.

" 27th.—Headache relieved by cupping. Had a severe shivering fit this morning, reported to have lasted two hours, and is now sweating profusely. Pulse 66, full. No pain of abdomen or side. Two stools.—Let him have the powders of sulphate of quinine every third hour. Also an anodyne draught, with forty drops of tincture of opium, at the commencement of the paroxysm.

" 28th.—Pulse 66. Feels chilly. Bowels open.—Continue powders of sulphate of quinine.

" 29th.—Had a shivering fit lasting an hour and a half, commencing at nine. Has sweated much. Pulse 66, full. Complains of general soreness. Bowels open. Had nausea, no vomiting.—Let him have an effervescing saline draught every hour. Continue the powders.

" 30th.—Pulse natural. No pain to-day. Appetite pretty good. Five powders taken.—To have four ounces of steak and a pint of porter.

" 31st.—Took six grains of sulphate of quinine this morning at half-past eight. Shivering came on at nine, and lasted about half an hour, but was much slighter. No sweating since. No headache, but complains of nausea and giddiness. Bowels open.—Let him have the effervescing saline draught now and then. Continue the powders. To have ordinary diet to-day, but the steak to be repeated to-morrow.

" June 2d.—Took a double dose of quinine again this morning at half-past eight. Has had a little chilliness; no rigor.—Continue the powders.

" 3d.—Began to shiver directly after visit yesterday. Took five grains of sulphate of quinine, after which it went off. Sweated much. Has complained much of *tinnitus aurium* and giddiness since yesterday afternoon. Two stools from pills taken last night. Pulse 68, full. Tongue whitish.—Repeat the powders every fourth hour; and the laxative pills at bed-time.

" 4th.—No shivering to-day. Much less *tinnitus*. Bowels open.—Continue the powders and pills.

" 5th.—Five powders taken. No vertigo or *tinnitus*. Appetite good.—To have additional allowance of bread.

" 6th.—Had chilliness; no rigors. Six powders taken. Bowels slow. No pain.—Let him take two colocynth pills immediately. Continue the powders.

" 7th.—No return of shivering. Complains only of pain of back.—Apply a warm plaster to the lumbar region. Continue the medicines.

" 8th.—Bowels slow. Feels drowsy to-day. No shivering.—Let him have the colocynth pills. Continue powders.

" 13th.—Bowels slow.—Let him take a cathartic draught.

" 15th.—Two laxative pills at bed-time.

" 17th.—Inflammation of eyes, particularly of right, with adhesion of eyelids in morning. No headache.—Let him have ℥ i. of compound powder of jalap immediately. To bathe his eyes frequently with tepid water, and to apply simple ointment to the edges of the eyelids.

" 18th.—More inflammation of right eye.—Apply the cupping instrument to his temples. Repeat the powder of sulphate of quinine three times a-day.

" 20th.—Eyes still sore.—Apply eight leeches round the eyes.

" 21st.—Two leeches only fixed. Bowels confined. Inflammation of eyes somewhat abated.—Repeat the leeches and purgative draught.

" 22d.—Leeches bled well. Eyes less painful. Still inflamed, with discharge of tears.—Dissolve gr xv. of the acetate of lead, in ℥ viij. of water, for a collyrium.

" 24th.—Both eyes somewhat inflamed, with impatience of light, and dimness of sight.—Abstract from the arm ℥ x. of blood. Continue medicines.

" 25th.—Eyes better. Bowels open.—Continue the lotion for the eyes.

" 26th.—Still some pain of eye-balls; less inflammation, but has some dimness of sight. No pain of head. Iris moves well.—Discontinue the powders of the sulphate of quinine. Apply a blister to the nape of neck.

" 30th.—Still some dimness of sight.—Let him have ℥ i. of simple ointment.—Dismissed cured.

" Case XIX.—A. B. a carpenter in Leith, had had many severe attacks of intermittent, which weakened him so much that he was almost entirely confined to bed. He had taken a great many remedies, but the disease increased in severity. Several of my pupils watched this patient in order to bleed him in the cold stage; at length the rigor came on, and blood was drawn to the amount of sixteen or seventeen ounces, stopping the paroxysm. He experienced the same sudden relief that all the others had done from pain in head and loins, great oppression at the præcordia, dreadful sensation of coldness. This man, however, had two returns of the disease, which were owing to constant perspirations, which he encouraged, and also from allowing his bowels to get very much out of order. After a few doses of laxative medicine, and insisting on his avoiding the perspirations, he had no return of the disease, and soon recovered his ordinary state of health without any other means.

" Case XX.—James Donachie, æt. 35, pale and emaciated, applied at the Dispensary on the 10th May 1828. States that he was at work in Lincolnshire last harvest, where he became affected with a quotidian intermittent, which continued to recur about five, six, or seven o'clock in the evening, till February last, except during his stay in the York Infirmary, and a short time afterwards. He became a patient in the Infirmary of Edinburgh, in the clinical ward. He further states, that whilst there, the symptoms ran so high, that he was bled in the hot stage, but without relief. He remained in the hospital four weeks, was treated with bark, and discharged; but was affected as severely as ever. Since about March 22, when he came out of the Infirmary, the fits have continued to attack him every evening at five, six, or seven o'clock, occasionally continuing until the morning. A considerable part of this time he was under the use of Fowler's solution, without the least

relief. Mr Taylor, one of my pupils, bled him during the cold stage. Before the bleeding, his pulse was 63; the rigor was completely formed. Although the vein was properly opened, no blood came at first; it soon dropped down the side of the arm, and afterwards came in a jet, when the rigor instantly ceased, and the bleeding was stopped. One ounce and a half of blood was abstracted. He got a little calomel and rhubarb to keep his bowels open. His strength now increased rapidly, and he had no attack for six days, till the 16th May. During this interval he felt tolerably well, and only experienced a slight sense of chillness and disposition to yawn, for a short time, instead of the regular paroxysm, and not every day, as before, but on alternate days, and at 1 P. M. instead of the evening. This last attack came on, as already mentioned, on Friday 16th May, while he was out taking a walk on the Castle Hill, during which he was exposed to a keen north-east wind, which prevailed at the time. He got home with great difficulty. He had another attack on Sunday 18th, which, together with the former one, he describes as having been attended with a less severe cold stage, but more intense hot and sweating stages, than he had before experienced. 19th, Complains of thirst, but no loss of appetite; surface pale; tongue white and moist; pulse 60, soft and compressible; bowels regular, has no uneasiness.

"Tuesday 20th.—Had no fit, but only a disposition to stretch and yawn, with a slight coolness of the surface; in a few minutes afterwards his skin became hot, attended with moisture on the breast and on the inside of the fore arms; pulse 80, soft.

"Wednesday 21st.—He had sweating yesterday afternoon after the visit; has no complaint to-day.

"Thursday 22d.—No paroxysm, but experienced the yawning and stretching, followed by heat and sweating.

"Saturday 24th.—Escaped, and had even no threatenings till

"Wednesday 28th, when there was slight chillness, succeeded by heat and sweating. He had another slight attack on Friday 30th, but both these attacks were again owing to exposing himself out of doors in cold damp weather.

"On June 2d, had a return of the stretching; yawning; heat; and sweating, which continued all night; indeed every night he perspires profusely, which is not to be wondered at, when it is known that he slept with four other people in a low room, eleven feet by twelve. After this he had no paroxysm, and the only remedies which were given were the decoction of quassia, sulphuric acid, and gentle laxatives; and he went to work on 26th June, as a labourer, with restored health and strength.

"Case XXI.—Francis Trail, æt. 26, presented himself at the Dispensary early in the beginning of May 1828, in a pale and very weak condition, with swollen features, when he gave the following account of himself: He is a native of Ireland, and went to work at the harvest in Lincolnshire in 1827; remained there about a fortnight; at that time he was in the enjoyment of good health, and continued so till the beginning of last January, when he began to feel unwell at times, but still was able to continue at his work on the rail-road, near Dalkeith. About the end of February he was seized with violent shivering, which was succeeded by great heat, and terminated in profuse perspiration; the paroxysms have continued ever since in the tertian

form, and he has been unfit to do any thing, his health and strength becoming very much impaired. He was bled early in the disease, in the hot stage, without any remission of his sufferings, and without preventing the accession of the regular paroxysms. The cold stage generally continued from half an hour to three quarters, and he experienced great suffering from pain in the head, and lumbar region, with sickness. On Sunday, 10th May, he was bled to 16 oz. during the cold stage. During the bleeding the rigors ceased, but afterwards a hot stage took place, accompanied with pain in the head and loins.

"On Tuesday the 12th, as he felt light and easy, and better than he had done for a long time, he walked a few miles out of town to see some friends, when he had a paroxysm, but which was not so severe as on former occasions. On Thursday he had another paroxysm, which was slight, unattended by rigors. After this period he had no cold stage, instead of which, he felt languor, headache, sickness, and pain in the lumbar region in a slight degree; he recovered his health and strength rapidly, and in about a fortnight from the time of the bleeding had no complaint. He stated that his appetite was now good, his strength daily improving, and at the end of May he returned to his work cured.

"Case XXII.—Dr Cambridge, 29th September 1827, had repeated attacks of intermittent fever at Ostend some time ago, at which place it was prevalent at the time. Since his arrival in Edinburgh, three weeks ago, he has had a daily paroxysm, and used the sulphate of quinine, without effect. His appearance is far from being emaciated, but he looks pale and weakly.

"The rigor came on severely at nine this morning, accompanied by insupportable pain of head, shooting from temple to temple, inability to take a full inspiration, with sense of tightness across the chest. The rigors continued for the space of three hours, and then ceased; but the sense of extreme coldness, and other severe symptoms, continued. I was called to see Dr Cambridge, and made my first visit at one o'clock, when his sufferings were still unmitigated. He still felt cold. His pulse was weak and oppressed, 130 in the minute; respiration 55; face pale, and features contracted; tongue loaded, but moist. A vein was opened; immediately after the blood began to flow, he expressed in strong terms his sense of the sudden relief he experienced; at the expiration of a minute he could dilate his lungs to the fullest extent. Eighteen ounces of blood were taken, which occupied three minutes of time; and before the arm was bound up, all his uneasiness had ceased; the painful sensation of cold changed to that of a pleasant glow of heat, and the surface of the body was covered with a gentle moisture. No debility followed, and he was able to walk through the room. A brisk laxative was ordered.

"30th.—Had no heat of skin yesterday after the bleeding. His feelings were comfortable during the remainder of the day: he passed an excellent night, and felt quite well this morning up to the moment of attack. The paroxysm came on at eleven A. M., and although he shivered smartly, yet he distinctly declared that he was quite free from the cerebral symptoms, and some of the other very painful feelings, which had distressed him on former occasions, excepting the tightness and oppression at the chest. Respirations 36 in the

minute. Pulse weak and not to be counted. Mouth slightly ulcerated, and complains of a bad taste. Tongue loaded, brown in the centre, and rather dry. Had four large, dark coloured, and fetid evacuations since last night, which produced a burning sensation at the extremity of the rectum. A vein was opened, and blood was drawn, to the extent of ten ounces, which occupied four minutes of time; before five ounces were abstracted, he described, in language most poetical, his relief, which was as sudden as it was perfect. The pulse was reduced in frequency, and became much stronger, and he said he was sensible of an increase of strength; indeed, he was able to walk through the room immediately without support. In about an hour after I took my leave, the rigors returned with considerable severity, but unattended by headache, and there was little oppression in the chest. He had some fever, and a sweating stage. The sulphate of quinine was again had recourse to, and he had only one other slight paroxysm. His health afterwards improved daily, and was soon perfectly re-established.

"Case XXIII.—Dr Cambridge informed the Author, that after reading his first paper on bleeding in the cold stage of intermittents, which he met with on the Continent, he had an opportunity of saving the life of a clergyman, upon whom he tried the practice, with complete success. This gentleman's health was reduced to the lowest possible ebb, by repeated attacks of intermittent fever. He had tried bark in all its forms, and quassia and arsenic, without the least mitigation. Dr Cambridge bled him in the cold stage, and he had no return of the disease, and his health was quickly re-established.

I have been favoured with the following case of *coma*, occurring in the cold stage, treated successfully by bleeding, by Dr Henry Lucas of the Royal Artillery, in the Royal Ordnance Hospital at Woolwich.

"Case XXIV.—Gunner William Smith, 9th Battalion, Royal Artillery. Admitted, August 16. 1827. Is perfectly insensible; eyes fixed, pupil partially contractile; respiration slow and deep; pulse full and slow; skin cool, especially about the lower extremities. Is completely insensible to external stimuli. Was brought from one of the guard-rooms, where he had been complaining of feeling ill. Had lately had attacks of ague. A vein was opened in the arm, and he recovered sense and motion on losing six ounces of blood. He complained of cold, though by that time the skin was warmer. Twelve ounces of blood were taken. Warm bottles were applied to the feet; cold lotion to the head; and a turpentine enema. In the evening he was found sweating. Bowels not free.—Cathartic mixture ordered.

"17th.—Bowels moved once by the mixture. Pulse soft and full. Skin moist and warm. Tongue rather loaded.—Repeat carthartic mixture.

"18th.—Had distinct rigors last night, succeeded by increased heat of surface and sweating. He was discharged on the 24th, cured.

"Cases XXV. and XXVI.—The following extract is taken from a letter from

the late Mr Brown, assistant surgeon in the 52d Regiment, dated Jersey, 8th August 1827: 'Since I had the pleasure of hearing you lecture, I have, in three instances, tried the effect of bleeding in the cold stage of intermittents, and twice with complete success. The patients were invalids, sent from Gibraltar for change of climate. One had had ague for eighteen months previous to his coming under my care; and at the time he left the depôt for Chatham, seven weeks from his being in hospital, he had no recurrence of fever. In the third case I was not so successful; it was, I think, from the bungling manner in which I opened the vein, I could not get the blood to flow.'

"Cases XXVII. XXVIII. XXIX. and XXX.

"*Cork, Marlborough Street,*

"Sir, *Wednesday, Nov.* 14. 1827.

"The perusal of your paper upon the utility of blood-letting in the cold stage of intermittent fevers, induced me to resort to that remedy, in the only four cases of the disease which I have met with since. The disease is of comparatively rare occurrence in this city, and never assumes a very aggravated form. Three of the cases I allude to were stout labouring men; the fourth was a delicate girl about twelve years of age. None of them presented very dangerous symptoms. The most distressing symptom was severe pain in the head, which was generally most intense during the cold fit. The loss of blood, so far from causing collapse, or adding in any degree to the feeling of debility which existed, seemed to produce quite an opposite effect. The patients expressed themselves immediately relieved, a gentle perspiration ensued, and they appeared as if revived by the influence of a generous cordial. The bleeding, however, did not effect a cure, but the subsequent attacks were infinitely more mild, and yielded in a short time to the exhibition of the arseniate of potass.

"The beneficial effects of this practice fully answered the expectations which you announce; and I have no hesitation in saying, as far as I can judge from limited experience, that we are indebted to your sagacity for a bold and unusually successful innovation in the treatment of a disease, which has constantly baffled our best directed efforts. You will excuse this brief communication, but I am aware that no reward is more grateful to a physician, than the assurance that his suggestions have received and merited the approval of his brethren.——I am, Sir,

With much respect,

Your obedient Servant,

To Dr Mackintosh. (Signed) D. B. Bullen, M. D."

"Sir,—In consequence of having read, with great interest, your valuable paper upon the subject of bleeding in the cold stage of intermittent fever, which was published in the Edinburgh Medical and Surgical Journal for April last, I resolved to adopt your plan of treatment, in the first cases of ague which should occur to me. Ague has not for many years been endemic in this neighbourhood, so that the opportunities I may have of further trials of your treatment will probably not be numerous. The results of the two cases, of which I take the liberty of sending you an account, are very favourable. They occurred to me in my practice as physician to the General

Infirmary here. With a strong conviction that future experience will confirm the correctness of your views and practice, and with feelings of admiration and esteem for an individual, who has improved the practice of medicine, by a disregard to long established prejudices, and erroneous doctrines, I remain, SIR,

Your obedient Servant,

Worcester, July 27. 1827. JONAS MALDEN, M. D.

To Dr Mackintosh, Edinburgh."

" Case XXXI.—May 5. 1827.—Priscilla Williams, æt. 30. Complains of pain in the head. Skin hot. Tongue furred. Pulse 120, small and rather hard. Pain in the epigastric region, with loss of appetite. Bowels confined. Has a severe rigor every other morning of half an hour's continuance, which is followed by a hot and sweating stage. Her complaints began with cold shivering, three weeks ago, in the neighbourhood of Oxford, where ague was prevailing.—Applicentur hirudines xii. regioni epigastricæ.—R. Extracti colocynth. co. g^r. xv.—Hydrarg. submuriatis g^r. iii.—Fiant pilulæ tres stat. sumendæ.—R. Liq. antimon. tart. ℥. xx. Potassæ nitratis g^r. x. Mist.—Salinæ ℥ i. M. Sumat quartis horis.

" 6th.—Pain in the stomach relieved. Headache continues. Bowels freely opened. No rigor yesterday.—Let her be bled during the cold stage to-day.

" 7th.—Lost ten ounces of blood yesterday during the rigor, when she became rather faint. A hot and sweating stage succeeded. Bowels open. Tongue cleaner.

" 8th.—Pulse 80, and of moderate strength. Headache and pain in the stomach much better. The rigor came on this morning, during which she was bled to sixteen ounces, and a slight hot and sweating stage succeeded.

" 9th.—Another very short and slight rigor this morning.

" 10th.—Ague returned to-day, but bleeding cut short the cold stage, which was neither followed by heat nor sweating.

" 13th.—Pulse 72. Tongue clean. Appetite good. Free from pain. Has had no ague since last report. Wishes to leave the hospital. Discharged.

" 27th.—I saw the husband of this woman, who told me his wife was quite well, and had no return of her disorder.

" Case XXXII.—May 22. 1827.—William Holland, æt. 24. Has pain in the head and limbs, with furred and dry tongue. Pulse 96, small. Bowels regular. Has severe rigors of an hour's duration every day, which are followed by the hot and sweating stages. He has great prostration of strength, and a sallow countenance, and is much emaciated. Illness began with a shivering ten weeks ago. He has for some time been wandering about the country, and sleeping in the open air at night.—R. Hydrarg. submuriatis g^r. iv. Pulveris jalapæ g^r. viii.—M. f. bolus stat. sumend.

" 23d.—Had a rigor yesterday which lasted an hour, and was succeeded by a hot stage and profuse sweating. The pulse in the rigor was 120, and very small. The bowels have been freely opened ; stools of a good colour. Headache continues.—Fiat venæsectio dum rigor adsit.

" 24th.—Was bled to fourteen ounces during the cold fit yesterday.

Whilst the blood was flowing, the shivering diminished. The hot stage followed, but lasted a much shorter time than usual. The pulse was not perceptibly affected by the bleeding.—Sumat mistura cathartica ℥ iss pro re nata.

" 25th.—Is much improved in appearance. Pulse 80, soft. The rigor came on at the accustomed time yesterday, but the shivering was less violent. Venæsection was repeated during the paroxysm. The blood flowed freely, and the rigor ceased immediately upon tying up the arm. The cold fit lasted twenty minutes. The pulse during the rigor was 120. No hot fit followed.

" 26th.—Had a slight tremor yesterday, which lasted an hour. The hot stage afterwards was scarcely perceptible. Bowels open. Tongue much improved. Pulse natural.—R. Sulphatis quininæ g^r. ii. Infusi rosæ ℥ i. M. —Sumat secundâ quâque horâ.

" 27th.—Had a short and slight shivering yesterday afternoon. No hot stage. Another at two o'clock A. M.

" 29th.—No return of the ague since last report. Pulse 72. Bowels regular. Tongue clean. He makes no complaint.

" June 2d.—Continues well. From this time till the 14th he had no return of the complaint. He had regained flesh and a healthy appearance, and was discharged cured."

The practice of bleeding in the cold stage has also been successfully tried by Dr Haviland, Professor of the practice of physic in the University of Cambridge, the result of which was communicated to me, with Dr Haviland's permission, by Dr W. H. Yates. The following are extracts from Dr Yates' letter: " Dr Haviland tells me, that in consequence of your communication to the profession on the propriety of bleeding in the cold stage of fever, he was disposed to make trial of it, having, as you would expect, frequent opportunities in these low countries. His principal object was in the first place to ascertain how far it was practicable; for when he read the account, it struck him that it was a practice quite consonant with his own views. He was always assured that in these cases there existed considerable congestion of the larger vessels, and that, could a portion of their contents be *safely* removed, the general result would be good. He has since tried it in several cases with decidedly beneficial effects."

The following clinical report on the success of bleeding in the cold stage of intermittents in India, was read by Mr Twining at a Meeting of the Medical Society at Calcutta, on 5th December 1829.

This report comprehends ten cases.

" Case I.—Was bled to 12 oz. in the cold stage of the 6th paroxysm of tertian intermittent. He experienced immediate relief, the rigors ceased, and he became hot for about half an hour; he had a slight return of fever daily at noon for six days, not preceded by rigor or cold. This patient had enlarged spleen.

" Case II.—Was bled to 14 oz. in the cold stage of tertian ague in the 4th paroxysm. The rigors soon ceased, he had a slight hot stage for about half an hour, and there was no return of the disease.

" Case III.—Was treated with purgatives, quinine and arsenic, afterwards with mercury to salivation, without benefit ; bled in the cold stage of the 11th paroxysm, he felt immediate relief, and had a very short and slight paroxysm without sweating stage. A slight feverishness remained for eight days after. At the end of 14 days, he had a return of ague, and on the return of next paroxysm, after one day's interval, he was bled in the cold stage, and cured.

" Case IV.—Quotidian ague of seven days' duration, purged and took bark, bled to 18 oz. in cold stage of 7th paroxysm with great relief ; was exposed to cold next night, and had continued fever afterwards.

" Case V.—Tertian ague, bled to lb. i. in the cold stage of the 5th paroxysm, with immediate relief ; had a short and slight paroxysm, and was cured.

" Case VI.—A most distressing tertian, with very severe rigors ; bled to lb. i. in the cold stage, and cured.

" Case VII.—Irregular ague, sometimes tertian, sometimes quotidian, bled to 12 oz. in cold stage, with much benefit ; he was cured, having in place of ague on the two next days of expected access, a slight feverishness.

" Case VIII.—An Asiatic, native of Madras, bled to 6½ oz. in the cold stage of 2d paroxysm of tertian. The rigors ceased in less than two minutes after the vein was opened ; he had no fever, and was cured.

" Case IX.—Irregular intermittent, used quinine without benefit, emaciated, bled to oz. vi. in cold stage, with immediate benefit, and had no return of the disease.

" Case X.—Bled to lb. i. in the cold stage of 6th paroxysm, the cold ceased, and he had a slight paroxysm. The ague returned on its regular day, and he was bled again to oz. x. in the cold stage, which was arrested, and had no ague or fever since."

In Mr Twining's second communication, read at a Meeting of the Society at Calcutta, on the 1st May 1830, the following additional cases were brought forward. The next six cases are numbered in continuation from the former paper.

" Case XI.—Quotidian ague of five weeks' duration ; the subject a woman ten years in India. Spleen tumid ; had used purgatives and quinine without benefit ; V. S. to oz. xiv. in the rigor on 18th December. Rigors ceased in

6½ minutes, and she had no return of the disease after V. S. Purgatives used for several days.

" Case XII.—A Mahomedan had eleven paroxysms of tertian; treated with purgatives and quinine ineffectually. V. S. to oz. 3. in rigor on 27th December 1829. Rigor ceased in eight minutes, and he had no return of the disease.

" Case XIII.—Irregular ague in a European, from 16th Oct. to 25th Dec. V. S. in cold stage procured immediate and great relief. Had a paroxysm on 27th Dec. V. S. ad oz. 17. Rigor ceased while blood was flowing. Cured—no return of ague afterwards.

" Case XIV.—Intermittent (at first quotidian, afterwards tertian,) of twenty days' duration. V. S. to oz. 9. which shortened the cold fit, and there was no fever or sweating stage. Ague returned on 1st January. V. S. in rigor, to oz. 8. Rigor ceased in 10½ minutes. There was no fever, and very little sweating afterwards. Return of ague again on 3d January, but he did not call any one in time to bleed him. He had no return of ague after 3d January.

" Case XV.—Tertian ague of three months' duration in an emaciated subject. Cold stage very distressing, with headaches and vomiting. Had tried quinine, purges, and other remedies, with no benefit. V. S. to oz. xii. at beginning of rigor. The cold fit ceased in ten minutes, and all distressing symptoms were quickly relieved. This patient left Calcutta next day, and, as was afterwards understood, had ague on the regular day, but the medical man present refused to bleed in the cold stage.

" Case XVI.—An emaciated European, twenty-four years in India, had tertian ague for three weeks, and irregular ague for two weeks before. Rigors usually lasted three hours. V. S. to oz. x. on 10th January, after rigor had lasted nearly two hours; the shivering soon ceased. Slight heat, and no sweating stage followed. Paroxysm returned on 12th January, at half-past 9, and he was bled immediately to oz. ix. Shivering ceased in eleven minutes; little fever, and no sweating followed. The ague did not return. He had a slight feverishness at 10 A. M. on 15th. Purgatives were used. No relapse.

" The four next cases were Europeans, treated by Dr M'Andrew, Surgeon H. M. 14th Foot, who has tried the treatment now described in many other patients, and has not found one in whom V. S. at the beginning of the rigor has failed to effect a cure; he has usually given three or four purges, and says he is so well satisfied with the cures, that in future he will use no other treatment. One of his patients, whose case is detailed, was cured by the first V. S. Three others required a second bleeding each.

" Six cases were furnished by Dr Berwick, Assistant Surgeon at Beerbhoom:—the patients natives of Bengal. Dr B. observes, that natives of

India may be bled more freely and with more benefit than most people suppose: he has been somewhat disappointed with quinine as a remedy for the intermittents at Beerbhoom. Four of his patients required each only once V. S.; the two others had each a second bleeding; all used purgatives.

"Five cases treated by Dr Mackenzie, in Arracan, were Asiatics. One bleeding each was sufficient to cure four of his cases; the fifth experienced great and immediate relief, and felt so well that he walked home, a long distance: had a return of the paroxysm at night, and has been affected with irregular ague since; but living at a distance, has not been seen in time to repeat the bleeding.

"Four cases were treated by Mr Bacon, Assistant Surgeon. The patients were Europeans, and he was well satisfied with the treatment. Two of his patients were cured by the first bleeding, and two others by the second.

"Four cases were treated by Mr Kent, Assistant Surgeon, Bengal Service, who has a very high opinion of the efficacy of V. S. in the cold stage of intermittents. The whole of his patients were cured, each by one bleeding, in the cold stage. One of them was first bled in the hot stage, without much benefit: on the next paroxysm, V. S. during the rigor was resorted to, and cured the patient. Mr Kent administered purgatives, according as the condition of each patient required.

"The next four cases were sent by Dr Brown, Bengal Service, who has a favourable opinion of the treatment. Each of his patients required only one bleeding; two of them used also quinine, and all of them purgatives.

"Two other cases were supplied by Dr French, Surgeon H. M. 49th Regt. He likewise thinks favourably of the practice, and means to try it farther; but declines giving a decided opinion on such limited experience. One of his patients had the rigor cut short and the disease cured by a single bleeding; the other was bled twice, purged freely, and took quinine; the effect of V. S. on the existing paroxysm being very decisive, and affording immediate relief.

"Thus, (Mr Twining observes,) the practice of eight medical men, at different stations, shews that V. S. in the cold stage of intermittents has been successful with Hindoos and Mahomedans, as well as Europeans; and of the latter several were persons many years resident in India. *Some of them were of delicate constitution, and in emaciated condition. In many of the patients, quinine and various other remedies had failed for a long time.* The early stage of rigor appears to be the best time to take blood; but bleeding in *anticipation* of rigor does not seem to be of any benefit. Mr T. concludes by stating, that V. S. at the commencement of rigor appears to be fully as efficacious, and as deserving of confidence, as Dr Mackintosh has represented; and his experience up to this time entirely corroborates Dr M.'s good opinion of the treatment."

The fifth volume of the Calcutta Medical and Physical Transactions has been published since the above cases and remarks were quoted in the former edition of this work. It contains three additional papers, shewing the beneficial

effects of V. S. in the cold stage of intermittents, in different parts of India.

Dr H. Mackenzie, in a paper read before the Society on 7th June 1831, states that—

"In cases of irregular fever, and where the cold stage is not distinctly marked by rigors, for reasons before alluded to, I have not had sufficient experience to speak with confidence. But it would argue an unnatural distrust in the evidence of my senses, and an extraordinary want of interest in the improvement of our profession, if, under existing circumstances, I remained insensible to the beneficial effects of the remedy in question; and it would show a deficiency in the respect due to my professional brethren, if I refrained from laying before the Society, the proofs I have witnessed of the advantage and perfect safety of a judicious use of the lancet, in the commencement of the cold stage of intermittents.

"A gentleman, (Mr Twining,) to whom the Medical Profession, and the Medical and Physical Society in particular, is greatly indebted, has already furnished so many cases, that it may be unnecessary to take up time by particularising any more. I beg, therefore, to offer merely an abstract of my usual practice in intermittents, with its general results: and this, I trust, will be received with that spirit of lenient consideration and kindness, which a person unaccustomed and unwilling to obtrude his observations would solicit and expect.

"It may be proper here to state, that in almost every case, previous to using the lancet, I have thought it right to exhibit a smart dose of calomel and jalap, which was repeated daily, until the patient's tongue appeared clean; or at least until it has felt soft, and until the contents of the bowels have been well cleared out. When the lancet is used, the vein should be so opened, as to permit the blood to flow *pleno rivo*; afterwards, moderate doses of calomel and jalap, if required: or the Pil. Rhei Comp. of the Edinburgh Pharmacopœia is usually given at bed-time. In this way, in general, no quinine is given; but if absolutely required, there is nothing incompatible with the other remedies, in its exhibition as a powerful adjuvant in the usual manner.

"From the arm of a Seapoy, who had been daily suffering severe paroxysms of intermittent fever, I took about four ounces of blood in a full stream. In less than five minutes, to his apparently great surprise, and to that of his comrades, who seemed quite astonished at the sudden change, he declared himself perfectly well. He had not the slightest return of fever for more than six months that he subsequently remained under my charge. I had another case, very similar to the above, where five and a half ounces of blood sufficed; and several cases, at least a dozen, where the loss of from four to seven ounces of blood, though it did not completely cut short the existing paroxysm, certainly relieved it, and prevented any return of fever while the patients remained in the hospital. Some patients in whom the paroxysm has been arrested by bleeding, have felt themselves slightly heated, and uneasy, for a short time, at the hour and day the fever might otherwise have been expected to return; but these feelings have entirely gone off in the course of a few days, without any other medicine than a warm stomachic laxative. Others have had distinct returns of fever, for two, or perhaps three days; the paroxysms becoming more indistinct, and soon ceasing

altogether, with precisely the same treatment; while a few have been bled a second or third time, and cured.

"A stout European officer, had been long troubled with fever, but no distinct rigors. By great attention to his stomach and bowels, he was for a considerable time enabled to keep off the fever, excepting about the lunar periods; but it so happened that he never could be seen in time to try the effects of V. S. just as the fever began, with any thing like a fair chance of its success. He acknowledged that his greatest relief arose from attending to the state of his digestive organs; he usually took calomel and jalap four days before the expected period of attack: and he always suffered most, when by neglect, or from the interference of urgent public duties, he was obliged to take a purgative on the day of the expected paroxysm. In this way, by the judicious use of calomel, jalap, sulphate of magnesia, and the compound rhubarb pill, he for a long time precluded the necessity of taking any quinine, although he had previously been obliged to take such quantities as to cause a feeling of great uneasiness in the temples, and much disturbance in the head. He is sure to suffer from any extra fatigue, or exposure, and when any circumstance prevents his usual attention to the *primæ viæ*; and I am sorry to hear he still continues subject to fever, in spite of quinine.*

"A naturally stout young European officer, had been considerably reduced from repeated attacks of tertian. He was purged with calomel and jalap, and afterwards bled in the middle of the cold stage; he became faint and sick during the operation, which prevented more than about nine ounces of blood from being abstracted. The paroxysm was merely relieved, not cut short. On the third day, he had a distinct paroxysm, less severe than formerly. He was not again bled, nor had he any return of fever for upwards of eight months, nor I believe till this day. In this case, the patient took a few doses of quinine, of 2 grains each, some days after the bleeding, in order to secure its good effects.

"A stout European gentleman, who usually enjoyed good health, had suffered for ten days with fever. At first, rigors were not distinct, but afterwards they became severe in the extreme. His tongue was thickly furred, and his stomach much disordered. He had calomel and jalap, and was well purged; after this he was bled, when the rigors were so strong, that it was difficult to keep his arm sufficiently steady to open a vein; about eleven ounces of blood were abstracted, which relieved him considerably, but not completely. He refused to take quinine, and had no return of fever for six days that he remained at the station. I subsequently heard a casual report, that he had had fever after his removal, by water, to another station. The above summary of my practice

* It is frequently stated by practitioners, that they *never fail* in curing intermittents with quinine. When such an assertion is made, it is safe to draw one of two conclusions,—either that the individual has had little experience, or that he has made a rash and erroneous statement. Many die of intermittent, and its consequences, in aguish countries; and a very large proportion of those who return to Europe with broken constitutions, attribute the commencement of their sufferings to the same cause, notwithstanding the use of this important remedy.

does not include the five cases sent to Mr Twining, and read with his Essay at the meeting of the Society in May 1830.

"I by no means wish to insinuate that bleeding, however successful, can leave a patient in a state or condition to resist future attacks of the same intermittent, or the accession of fever of a different type, when exposed to recurrence of the old, or to a new exciting cause; *but I must differ widely in opinion from any person who says, that blood-letting, in intermittent fever, is either a dangerous or a useless measure.* On the contrary, as far as my experience goes, I need hardly make an exception, when I say, that in almost every case it uniformly affords decided relief; and even when it does not at once cut short the disease, if not carried too far, it never prevents as speedy a cure as could be obtained from the use of quinine alone; because the quantity of blood necessary to be taken is small, it is generally well borne, and so far from precluding, it aids and facilitates the operation of moderate doses of quinine, and other suitable medicines.

"I therefore feel it my duty, and trust I may be considered fully sanctioned, confidently to recommend a judicious use of the lancet in the cold stage of intermittent fevers."

Mr Dempster, in his communication, states that—

"Febris intermittens, (quotidiana et tertiana,) has been a frequent disease in the hospital of H. M. 38th Regiment at Ghazepoor, in the latter half of the year 1830. Many cases were bled at the commencement of the cold stage, to the extent of ℥ viii. to ℥ xvi. with the happiest effects; in most instances the bleeding cut short the paroxysm at once, and in all of them, except one, modified the succeeding paroxysms. I shall briefly mention a few of the cases as they occur in the Register.

"Case I.—Thomas Coleman, admitted 8th July, with quotidian intermittent, had had a regular return for six successive days previous to his coming to hospital, the paroxysm varying every day; he was bled to ℥ viii. in the very commencement of the cold stage of 2d paroxysm after admission. The rigor was immediately cut short; the paroxysm was ended in half an hour, and he had no further return of it, and was discharged to his duty on the 24th.

"Case II.—Thomas Clappe, admitted 17th July, with tertian intermittent. He was bled to ℥ x. in the cold stage of 3d attack, which instantly cut short the paroxysm, and he had no further return of the disease; was discharged to his duty on the 31st July.

"Case III.—Serjeant Thos. Tew, admitted 24th July, with tertian intermittent; had two paroxysms after admission, and was bled to ℥ xii. in the cold stage of the 3d, which cut short the rigor. He had then no further return of the disease, and was discharged to his duty on the 6th August. The same patient was again admitted on the 22d August, with a similar attack; had three paroxysms before he came to Hospital; and was bled to ℥ xvi. in the cold stage of 1st pa-

roxysm after admission, which instantly arrested the rigor. He had no further return of intermittent, and was discharged to his duty on the 29th of the same month.

"Case IV.—James Mason, admitted 24th July, with common continued fever, for which he was twice bled and used purgatives. On the 30th, the type changed to intermittent: he was then bled to ℥ xii. in the cold stage of 1st paroxysm, which completely cut short the rigor. He continued free from further attacks; and was discharged to his duty on 5th August.

"Case V.—Bernard Leonard, admitted 17th August, with continued fever, which in three days after changed to tertian intermittent. He was bled in the cold stage of 2d paroxysm, which almost instantly cut it short: he had no further return of the disease, and was discharged cured on the 31st.

"Case VI.—Matthew Pudmore, admitted 9th September; had two paroxysms after his admission, and was bled to ℥ xii. in the cold stage of the 3d return of tertian intermittent. He experienced instant relief; the paroxysm ceased soon after the vein was opened; he had only one irregular paroxysm on the second day after the V. S. and was discharged to his duty on the 20th.

"Case VII.—William Murdy, admitted 11th Sept. was bled to ℥ xvi. in the beginning of the cold stage of 2d paroxysm of tertian ague, which instantly cut short the rigor; he had no further return of the complaint; and was discharged cured on the 18th.

"Case VIII.—Corporal Francis Collins, admitted 13th Sept. was bled to ℥ xvi. at the commencement of the cold stage of 1st paroxysm after his admission, and 3d attack of tertian intermittent, which completely put a stop to the rigor. He had no further return of ague; and was discharged on the 24th September, quite well.

"Case IX.—Samuel Campbell, admitted 21st Sept. was bled to ℥ xvi. in the commencement of cold stage of 2d paroxysm of quotidian ague, with immediate relief. The rigors were instantly arrested; he had only some slight febrile feeling for two or three days after, without any rigor; and was discharged perfectly well, on 5th October.

"Case X.—Robert Collroon, ætat. 23, four years in India: admitted 24th September, with irregular intermittent, and great determination to the head; for which he underwent the usual routine of treatment in the Hospital, and was convalescent on the 5th October. On the 15th, he had a regular paroxysm of intermittent, at 11 o'clock A. M. and was bled in the beginning of the cold stage to ℥ xii. which cut short the rigor, and the paroxysm ended very soon after. Had a slight return of fever on the 16th, without any previous rigor, and no recurrence of disease afterwards; he was discharged quite well on the 22d.

"Case XI.—William Jeffs, æt. 25, admitted 9th October; had a paroxysm of intermittent the day of his admission; rigor was very severe. On the 11th the paroxysm came on at 2 P. M. when he was bled at the commencement of the

cold stage, to ℥ xv. which instantly cut short the rigor, and the paroxysm ceased soon after. He had no further attack, and was discharged cured on the 18th.

"Case XII.—Joseph Bilton, Private, Grenadier company, æt. 36, nineteen years in India: admitted 14th October; had several paroxysms of quotidian intermittent before coming to Hospital. He was bled at 8 P. M. at the commencement of cold stage, to the extent of ℥ xv. which cut short the rigor, and in less than ten minutes the paroxysm was finished. He had a slight return of fever, not preceded by chill, every alternate night at eight o'clock, till 23d, when he had a regular paroxysm at 8 A. M. Was bled to ℥ xvi. in the beginning of the cold stage; the rigor was instantly cut short, and the paroxysm was ended in about ten minutes. He had no further attack, and was discharged on the 27th.

"I have also practised V. S. in the cold stage of intermittents, amongst the women and children of the Regiment; and have every reason to be satisfied with the result. Other measures were employed at the same time with the V. S. such as active purging, followed by small doses of sulphate of quinine, or infusion of cinchona: and during convalescence, a moderate quantity of wine may be allowed with benefit. When a sensation of fulness in the region of the spleen prevailed with a confined state of the bowels, the spleen mixture, (with or without the sulphate of iron,) has been prescribed, with much advantage to the patient.

"In the greater number of the above patients, V. S. was practised at the commencement of the cold stage, and in almost every case, by myself. I highly approve of the practice, and should I again suffer from ague, I would not hesitate a moment to employ the same treatment for myself; I regret that this practice had not been adopted, when I was such a lamentable sufferer in 1826; as I am confident that it would have saved me from a protracted and distressing illness, which ultimately obliged me to undertake an expensive voyage to sea.

"In every case where I have employed this mode of treatment, I have found the same happy results, with the exception of two. The first was that of a gentleman whom I bled twice at the very commencement of the cold stage, without much benefit; but his case was complicated with acute rheumatism; and he did not pay the strictest attention to the orders which are usually given patients in Hospital. The other was relieved by the V. S. and can hardly be termed a failure of that remedy; for the rigor was always either arrested, or moderated by the bleeding; though the ague fits recurred several times, and appeared to be connected with some visceral disease, attended with cough. The detail of the case is as follows:—A Private in No. 3. Company, was admitted on 22d September, with common continued fever; for which he was bled to the extent of ℥ xxv. and had leeches twice applied to his temples. On the 28th, the type changed to intermittent; the attack came on in the forenoon, and he was bled to ℥ xv. in the cold stage, which cut short the paroxysm. On the 29th, he had a slight accession of fever without rigor, and was convalescent on 3d October. Next day, he had a paroxysm in the forenoon, and was bled in the cold stage to ℥ viii. with but little benefit; however, the rigor was shortened, and the other stages of the paroxysm were slight. He continued free from fever till the 7th, when he had some febrile symptoms. On the 8th, had a severe paroxysm; was bled again

in the commencement of the cold stage, to ℥ ss. which cut short the rigor, and in less than a quarter of an hour, the paroxysm was ended. He had a draught given to him, composed of ℥ss. of spt. ammon. aromat. in peppermint water. Two days after he had some slight pyrexia, and after that, seemed to be doing well till the 18th, when his feet and ancles became œdematous; next day he had cough, with mucous expectoration, and slight difficulty in breathing. Diuretics of the usual kinds were prescribed, with milk diet, and after a few days, some beer. Latterly, the spleen mixture was occasionally administered. Infusion of cinchona, with nitric acid, completed the cure. He was discharged to his duty on the 5th November, quite well.

"It is my intention to continue the V. S. in every case of intermittent fever, where I can see the patient myself, or have a trustworthy person to assist me. I am very fortunate in having my bungalow next to the Hospital, to which I can walk in a minute and a half, or thereabouts."

Mr Griffiths states, that—

"If the two following cases of intermittent fever should be considered by the Medical Society worthy of notice, they are placed entirely at their disposal. It is possible, that occasionally the prejudices of the natives, may induce them to object to blood-letting in agues; and therefore, it may not be easy, at first, to obtain satisfactory trials of that practice, in various parts of the country. These two, are the only cases in which I have yet had opportunity to bleed native patients, during the cold stage of intermittent fever, at Baitool. In both, the disease was of a severe and marked description, and its influence decidedly established in the constitution: the efficacy of V. S. unaided by bark or quinine, was fairly tried, and its power in arresting the progress of the paroxysm in Asiatics, and in preventing its return, could not be doubted.

"Case of Bussarat.—This was a tall thin Mussulman, about nineteen years of age, and of apparently weak constitution. He had come as a servant, from Cawnpore to Baitool. Having slept one night in the month of March, under a tree, he found, on the following morning, that he was unable to move his left arm or leg, without considerable pain; and in the course of the day, was attacked with ague, which proved to be a quotidian. The large joints were attacked in succession by rheumatism; and he continued to suffer under these complaints about ten days. One morning, having mentioned that he felt the cold fit coming on, preparations were made for bleeding. Accordingly, when he appeared to be completely under the influence of the rigors, a vein in his arm was opened, and about twenty ounces of blood permitted to flow; syncope then came on; the rigors ceased, and he had no return of ague.

"It appears worthy of remark, that the rheumatic affection was not benefited by the bleeding, but continued about three weeks; and ended in the formation of an abscess, over the metatarsal joint of the great toe.

"Case of Emambux.—This was a Mussulman, (bhistee, or water carrier,)

about twenty-two years of age; rather above the middle height, of remarkably robust make, and a constitution apparently uninjured by disease or excesses of any kind. Like the subject of the preceding case, he had come from Cawnpore to Baitool.

"June 28th, 1830.—He was this afternoon attacked with ague, which went through its various stages in the usual way.

"29th.—Was again attacked with ague; and on applying for medical assistance, had a dose of ipecacuanha powder given him, which produced no effect.

"30th.—The paroxysm has returned, and he complains of insupportable pain in his head. Ordered to take a full dose of ipecacuanha powder and tartarized antimony, which acted freely upon the stomach and bowels.

"July 1st.—Having mentioned, about noon, that he felt the paroxysm returning, preparations were made for bleeding; when the rigors were fully established, a vein in the right arm was opened, and twenty-four ounces of blood abstracted. The rigors now ceased, and syncope came on. The complaint was completely arrested, as neither the hot nor perspiring stage took place; and he has remained well since. In the course of four days afterwards, he was seen actively engaged in carrying water, as usual.

"From what I have heard, since the above cases were cured, concerning the effects of bleeding, at the beginning of the rigors, in intermittent fevers, I am disposed to think, that a smaller quantity of blood would have answered the same purpose in the cure of these patients: however, the account of their recovery appears to me of some interest, in showing, that bleeding freely at the beginning of the cold stage of intermittent fevers, in natives of India, is not a dangerous practice; and that Asiatics, whose constitutions are not impaired by protracted visceral disease, are found to recover quickly after that mode of treatment."

Several very whimsical objections have been brought forward by Professor Alison, against V. S. in the cold stage of intermittents. These were strongly and eloquently urged in a clinical lecture by the Professor, upon the case of James Bennet, which will be found at page 100. of this work. Statements made in a lecture scarcely demand notice, but as they have been published in one of the Medical Journals, it has been deemed advisable to enumerate the objections here, in order to expose their weakness and fallacy.

1*st*, It has been said by the Professor, *that although V. S. in the cold stage does not actually produce death, as was formerly imagined, its immediate or ultimate effect must be debilitating. Even in a continued fever, when the disease is cut short by the*

bleeding, the effect is debilitating; but as in intermittent we may expect a number of paroxysms, the debility is still more to be dreaded in the progress of the disease. Now, this is after all only a truism; but allowing that the effect would be productive of thrice the degree of debility, yet who would not joyfully compound to cure the fever at the first onset of the disease even at such an additional expense? The cases I have already published, which were narrowly watched by a multitude, I may say, of observers, prove that this kind of debility is purely hypothetical. Not only in fevers produced by sub-acute inflammatory action of some important organ, but also in pure inflammations of the same parts, we bleed in order to produce debility, not as a matter of choice, but as choosing the least of two evils. But this term debility, is ever haunting the imagination of the Cullenians, according to whose erroneous system, not only are spasm, delirium, and the tremors, but also the oppression of the pulse, the disorder of respiration, the want of appetite, the nausea, and the vomiting, which accompany a paroxysm of intermittent, all ascribed to debility. It is no wonder, therefore, that from *à priori* reasoning, the disciples of this system should object to this practice under such erroneous pathological views. But they should recollect that I bleed only in certain cases of intermittent, not to produce debility, but to restore the balance of the circulation at as small an expense of blood as possible.

2*d*, It has also been said, that "*bleeding in the cold stage has generally been condemned, and probably from experience.*" This is too bad! the author begs most respectfully to ask the Professor, by whom has it been practised, and for what reasons condemned?

3*d*, It has been said that it cannot be successful, because "*it attacks the effect, and not the cause, of the disease.*" Let me ask, who knows any thing of the cause of any disease which affects mankind? There is a great deal of pedantry and ambiguity concerning this term *cause*, as it is generally used in medical language. In employing it, some mean to express the agent, whether known or unknown, which actually induces the disease. For example, the application of boiling water to the surface of the body produces inflammation and its conse-

quences. This is a known cause. An imaginary substance, to which the name of marsh miasm has been applied, is an example of the second. It is this unknown substance to whose agency intermittent fever is ascribed. Another sense in which the term *cause* has been applied, is the first diseased action induced by either of the agents. It can easily be shown how very absurd this objection really is, taking it in either sense. In the case of the scald, we are called upon to treat the effect and not the cause;—the hot water is removed, but the effect remains.

A. B. has intermittent fever; the cold stage is long and severe; the constitution is too much oppressed, and the patient dies; or rather let me suppose, he would have died but that he is bled. Is it not absurd to object to the practice, merely because the practitioner is not "measuring swords" with the cause, viz. the marsh miasm, but treating the effect? Or, A. B. has had the cold fit, and is now labouring under high excitement, and the powers of the constitution are unable to produce the sweating stage; inflammation in the head, chest, or abdomen, takes place; or it may prove to be a continued, remittent, or bilious remittent fever; are we not to treat the case pathologically, because we should only be attacking the *effect*, and not the cause of the disease?

In the other sense it will be seen to be an equally erroneous objection, viz. the first diseased action produced by any agent whatever. Let me ask, who can point out the first link in the chain of any morbid action? Is it in the nervous system, or in the vascular? Both are seriously involved. If in one, how is it communicated to the other? Who knows the structure of a nerve, and who is acquainted with its physiology? If in the vascular system, whether is the primary diseased action in the arteries or veins, in the capillaries or the trunks, or is the blood itself affected?

It is wholesome to put these questions home to that medical man who is whimsical in investigating the occult causes of diseases. If the practice pursued by medical men were to be rejected, and condemned as being "*unsatisfactory and unscientific*," (as V. S. in the cold stage has been by Dr Alison,) because they treated the *effect* and not the *cause* of the dis-

ease, I fear the profession of medicine would soon be at an end, and its professors left in a more miserable plight than Shakespeare's poor apothecary. Upon this principle, it is unsatisfactory and unscientific pathology which leads us to bleed, blister, and give purgatives for the cure of any disorder, because we are treating the effect, and not the cause of the disease.

4*th*, Another objection has been made, *that bleeding in the cold stage is only, to say the very best of it, "a palliative remedy."* Does not a similar objection apply to bark and arsenic? "*It may, however, be remarked,*" (says Sir James Fellowes, at p. 382,) "*that, in taking a review of the general practice in intermittent fever, the means usually adopted appear to have had no other view than to lessen the inconvenience of the paroxysms, and that they have not always been sufficiently active to put a stop to the disease in a way that was satisfactory to the patient or to the practitioner.*" To say the very worst of it, therefore, the practice does not stand on weaker ground than the other remedies. I have seen much mischief done by the use of bark in aguish districts; and I have known one man killed by arsenic. Clark (on Long Voyages) mentions a similar accident, but I have as yet known nothing but advantage to proceed from bleeding in the cold stage. I wish not to be understood to mean that bark and arsenic will always produce bad consequences, or that bleeding in the cold stage will invariably prove beneficial. I am convinced that both kinds of remedies require sound judgment in their application; and that, if there be any organic engorgement or alteration of structure, bark must be injurious, if it have any effect at all, and that this is precisely one of the cases likely to be benefited by bleeding in the cold stage.

5*th*, This practice has also been objected to, forsooth, *because it is a "mechanical remedy." It is said "to affect the powers which move the blood, but it cannot affect the altered state of the blood itself."* That it does affect the powers which move the blood, is a fact which cannot be denied, and this is precisely one of its great advantages. But to say "that it cannot affect the altered state of the blood," is a mere assertion. I maintain that it does also affect the altered state of the blood.

Without entering into the physiological controversy about the nature of the changes which the blood undergoes during its circulation through the lungs, I may content myself with stating the fact, that some change necessary to life does take place on the blood in the lungs. From the commencement of the cold stage, the condition of the respiration decidedly proves that the functions of the lungs are much embarrassed. It is not even necessary to inquire into the cause of the pulmonary distress. The lungs cannot perform their functions;—does it not therefore follow that the blood cannot undergo the usual and necessary changes? The blood then must be in a morbid condition, and when taken from a vein in very severe cases, it looks black, and does not coagulate. In such circumstances, when bleeding is had recourse to, it relieves the circulation, unloads the vessels of the lungs, and thereby enables them to perform their functions; the blood is acted upon, and the usual changes are effected. Therefore this "*mechanical remedy*" does also affect the altered state of the blood.

But there is another interpretation of the expression, "*altered state of the blood.*" It may relate to a supposed alteration produced on the blood by the morbid agent, the marsh miasm; and I have no doubt this is the sense intended to be conveyed. In the first place, I may remark, we know nothing whatever of this marsh miasm; we assume the existence of such a substance; and, as has been already stated, some have even ventured to give it sensible qualities, as smell and specific gravity. This is certainly going quite far enough in mystery and darkness; but to say it directly affects the blood, is a gratuitous assertion well becoming a true Cullenian, whose whole system of physic is founded upon, and carried on from page to page by, the most erroneous and the weakest assumptions. This has always been my great objection to this system. Its author lost sight of the true Hippocratic maxim in the investigation of diseases. Cullen declared that there "are more false facts in medicine than false theories;" and on one occasion he asserted in his lectures, that what were called "medical facts were nothing more than medical lies." It will be seen, that whenever Cullen came to a difficulty, in-

stead of waiting patiently for an accumulation of facts to enable him to investigate all its bearings, he made a leap over the obstacle by assuming a certain thing for a fact. He established a system of special pleading, and a symptomatical pathology, which have been exceedingly injurious to medical investigations; and it will soon be generally acknowledged that his labours have retarded, rather than advanced, the science of medicine.

Dr Alison is earnestly requested to peruse all the communications already referred to, in the 5th Volume of the Calcutta Transactions; and the author has no doubt he will take a speedy opportunity of acknowledging, that his own theories are found to be erroneous, by the facts that have been accumulated since he delivered the lecture, in which he was pleased to condemn the practice of V. S. as "*unsatisfactory and unscientific.*"

In conclusion, I wish to impress upon the minds of my readers, that by V. S. in the cold stage of intermittents, we stand upon vantage ground, by affording our patients the benefit of the following circumstances.

1*st*, The injury which in many cases results from the continuance of the venous engorgement, which so constantly leads to organic diseases, is avoided.

2*d*, The danger proceeding either from the want of sufficient re-action, or from its excess, is also avoided.

3*d*, The practice prevents debility, in a direct manner, by saving the vital fluid, as well as by materially shortening the duration of the diseased action.

4*th*, The chance of a return of a paroxysm is diminished; or if it should recur, the force of the attack will in general be weakened; and in that case a most important point will be gained, by affording an opportunity for the administration of other remedies, as bark or arsenic, which might previously have been exhibited in vain.

5*th*, Experience has also taught me, that bleeding in the cold stage is far more efficacious than bleeding during the hot stage, or in the intervals. Several cases are quoted, in which bleeding was had recourse to in the hot stage to moderate threatening symptoms, but without preventing a return of the

disease at the regular period; and in these same instances, bleeding in a subsequent cold fit, had the effect, not only of stopping the existing paroxysm, but of preventing its return.

If any other evidence were wanting to shew the advantage of a radical change in the treatment of intermittent fevers, it will be readily found by contemplating the results which befell one of the finest armies Great Britain ever sent from her shores, and which went to Walcheren on the 5th July 1809. The prevailing disease was intermittent fever, and in the course of six weeks, 8000 sick were sent to England, and 3000 more soon followed. While only seven officers and ninety-nine men were killed in action during the whole campaign, we find that forty officers and 2041 men died from disease. It is further stated in the official returns laid before parliament, that several months after the return of the army, there were on the sick list 217 officers, and 11,296 men! All this took place, notwithstanding the "*scientific*" employment of bark in every form.

A curious and an interesting fact was communicated to me by Dr Foot, (who served with the 17th regiment in India,) when he did me the honour to attend my lectures,—that some Persian physicians apply ice to the surface of the body in the cold stage of intermittents, and, it is reported, with good effect. I have also heard that it is a practice with some in India, to use the cold effusion.

It is proper, also, to mention the plan of preventing the paroxysm upon the first appearance of its approach, by applying tourniquets to the extremities, which was first noticed by Dr Kellie, in the 1st and 2d volumes of the Annals of Medicine.* The tourniquets appear to act, by confining the blood in the extremities, and preventing so much at least of the congestion in internal organs.

Treatment of the Hot Stage.—The best treatment which can be pursued in the hot stage, is to remove the bed-clothes as far as the season and the patient's feelings will admit; to

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* This curious remedy is mentioned by Boisseau, p. 523, as if it were the original invention of Lallemand.

sponge the extremities with water; to use cold drinks; and, in fact, to employ every means which can diminish the temperature of the body. If there be symptoms of local inflammation, bleeding is to be had recourse to, either general or topical, which has always been employed by judicious practitioners in such circumstances. I need not speak of febrifuge and diaphoretic mixtures, which are very good for the druggist, will assist in filling the pockets of the routine practitioner, and suit the notions of a symptomatical physician. It is more than doubtful, whether such medicines ever diminished the violence, or shortened the duration, of the hot stage of an intermittent.

Treatment in the Sweating Stage.—When the sweating stage commences, it must be encouraged until the uneasy feelings are relieved, or at least mitigated. Great injury is done by allowing patients to perspire longer, by which they are not only unnecessarily weakened, but the subsequent paroxysms of the disease are in general rendered more violent. The best way of arresting this stage, is to change the linen, after drying the patient carefully with towels, and to place him on a couch. A second paroxysm has been frequently traced to a chill, occasioned by the coldness of the damp clothes, towards the termination of the sweating stage. Should there be no marks of any local inflammation, the patient may be offered light nourishing food, and even wine if necessary.

Treatment during the interval.—The first thing to be done, is to determine whether or not there exist any local disease, and if so, what is its nature and seat. Medical men have hitherto deceived themselves very much by treating this disease, as well as many others, merely from its name; because it is intermittent fever, bark must be prescribed! Another error into which they have fallen, is, that they imagine the only organic lesions which take place exist in the liver and spleen, whereas the brain and the lungs suffer, perhaps, more frequently. I have seen fatal affections of the heart arise in the train of consequences from intermittent fever. Bronchitis is also of frequent occurrence. These facts are stated from my own experience; and, except the last, respecting bronchitis, they are fully proved by the cases and

dissections recorded by M. Bailly, as well as by the facts which are to be found in the works of Pringle, Cleghorn, Chisholm, and others.

If any organic disease exist, bark will be injurious, until it be either mitigated or entirely removed. Sir James Fellowes (Reports, page 350.) states, "that the dissections of those who died, discovered to us a series of morbid appearances of which we had no suspicion, and they enabled us to account for many of the phenomena of the complaint, and to form a more rational plan of treatment than that which we had at first adopted." M. Bailly came to the following practical conclusion: that he bled, to dispose the system to receive the action of the bark, and that he has suddenly, by such means, subdued intermittent fevers, which had previously resisted all other means; and he assures us at page 366, that although he would not altogether proscribe bark, yet he believes that bleeding alone, in most cases, above all, in our climate, would bring about a more substantial recovery. He also makes a very strong statement at page 375. "*In the commencement of an intermittent fever*," says he, "*one is almost always sure to destroy it by a large bleeding;*" and he shews that this disease is not so fatal to poor, debilitated subjects, as to those who are better off, and better fed. For example, the mortality at Rome, where great misery prevails, is 1 in 26 of the whole population; whereas, in the marshes in the neighbourhood of the Sienne, the mortality is in the enormous proportion of 1 to 10 of the whole population. He also assures us, at page 383, that we are not to dread debility; that those patients who were bled by himself abundantly, and at short intervals, not only were not depressed by this debility, but acquired in a few days a state of strength and health which they had not known for a long time. Had this distinguished author been aware of the safety and success of the plan of bleeding in the cold stage, he would not have made the complaint, that in the worst intermittents, that is to say, those in which the patients died in the cold stage, he had "not time to employ bleeding." Speaking of the advantage of bleeding in this disease, he says at page 383:—"*Car j'en excepte toujours les fièvres intermittentes pernicieuses, dans lesquelles on n'aurait pas le temps*

d'employer la saignée, si on ne se rendait pas maître de mouvement nerveux par ce précieux anti-périodique."

It is in such instances that the great advantage of bleeding in the cold stage is most apparent. In some of M. Bailly's cases, stimulants and bark, in considerable quantities, were given without benefit, and in the majority the pulse is described as having been strong.

Bark has been long in use, and although I never denied that it had virtues, yet, when given in substance, in the large doses which are admitted to be necessary, I have so frequently seen it do mischief, that the question has often suggested itself to me, whether it was not more injurious than beneficial? It seems to be injurious, in many cases, by overloading the stomach and bowels with indigestible ligneous fibre, and I have seen it cause serious intestinal irritation, as displayed by griping pains in the bowels, diarrhœa, and painful tenesmus. On examining the stools in these cases, they seemed chiefly to consist of bark, with a considerable quantity of mucus, occasionally tinged with a little blood. That preparation of bark which is known by the name of the sulphate of quinine, is the greatest improvement in modern pharmacy, and the knowledge of its beneficial effects in simple intermittents, affords sufficient proof of the virtues of the substance from which it is extracted; yet this remedy, all-powerful as it is, is useless in the cold stage, and must also fail in cases complicated with organic disease. Dr Fordyce, who had great experience in the treatment of this disease, states, that "*in many cases of perfectly regular tertians, the most skilful practitioners have been baffled in the use of Peruvian bark, and every other medicine recommended as useful in this disease.*" My youthful readers may rest assured, that the same observations are equally applicable to the sulphate of quinine. They may rest satisfied that no means hitherto devised can be universally successful; and the cases have been already pointed out, in which the sulphate of quinine may be expected to be beneficial, as well as those in which the same happy result is not to be looked for. It cannot be too strongly impressed upon the mind, that experience has taught me to

beware of any preparation of bark while the patient has fever, complains of oppression at the præcordia, or has a loaded tongue.

Sydenham's recommendation, of prescribing bark in the intervals, has been supported by subsequent experience. Bark is given in substance, in decoction, infusion, and in extract; but no one who has seen the superior efficacy of the sulphate of quinine, will, I am persuaded, if he can obtain it, ever use bark in any of the other forms. With respect to the doses of quinine, Andral states that Lerminier has prescribed it in a very great number of cases, in two doses of three and four grains each, with an interval of half an hour, four or five hours before the paroxysm. And he assures us, that given in this manner, it has almost always cut the fever short. In some cases, the fever has been equally prevented, by the exhibition of the quinine twelve or fifteen hours before the paroxysm. Once the quinine was given by accident in the middle of the cold stage, and that paroxysm was neither weaker nor more intense than the preceding one. The greater part of those individuals who took the two doses of three grains each, had slighter paroxysms than before; but the fever was not suddenly cut short, as it was in those who took the two doses of four grains each. He also states, that in two cases the sulphate of quinine did not subdue the fever till the dose was increased to twelve grains; and Lerminier gave three individuals twenty grains each during the day, stopping the fever without producing any accident. But with several other patients, to all appearance in the same circumstances with the preceding, a few grains created troublesome nervous symptoms, such as, violent palpitation of the heart; oppression; the globus hystericus; general uneasiness; flying pains in different parts of the chest and abdomen.*

The manner in which I have prescribed quinine, is to give three doses of five grains each, with half an hour of interval immediately before the expected paroxysm; or three grains

* Clinique Médicale, p. 488.

every half hour, beginning about three hours before the expected paroxysm. I have taken three and five grains, without feeling any thing unusual, and afterwards ventured upon ten, but a violent headache followed, which continued for nearly three days; I have given ten grains, however, to others, on two or three occasions, without producing any such effect.

Arsenic has been long in use in intermittent fever, and there can be no doubt that it has often proved serviceable. Fowler's solution is the preparation now in general use, under the name of *liquor arsenicalis;* the dose is from two to twenty drops twice or thrice a-day. Other tonics and bitters have been recommended; the best of these is the infusion of quassia. Opiates have been exhibited immediately before an expected paroxysm, sometimes with benefit, but they generally produce violent headache. Laxative medicines, to keep the bowels open, form an essential part of the treatment; and in general, the stools should be examined. I have met with cases which resisted every remedy, till it was ascertained that the patients had given erroneous accounts respecting the number and appearance of the stools; and upon the bowels being put in proper order, the disease has given way without further trouble. From the idea that intermittent fever is a disease of debility, many practitioners give nourishing and stimulating diet, with wine, in all cases; but after the above pathological account, and the appearances found on dissection, a word more need not be said to shew the impropriety of such treatment. In some instances, nourishment and stimulants prove beneficial, where there is no local disease; but in others, such treatment must prove prejudicial. The patient should be clothed according to the season of the year, and the temperature of the climate. He should avoid exposure in bad weather, (particularly in our climate during the prevalence of easterly winds,) and keep to the house after sunset, till he be sufficiently recovered.

REMITTENT OR YELLOW FEVER.

This is a fever in which there are remarkable remissions, followed in a few hours by exacerbations; so that it bears some resemblance to an intermittent. This circumstance has led Cullen to identify them; and in his definition of intermittents, it will be observed that he has embraced remittents also,—of the last he gives no separate definition. Remittent fever is a disease of warm climates, and when the skin is yellow it has obtained the name of Yellow Fever. The milder forms depend upon general functional derangement, which runs more quickly into disease of structure than is observed in the fevers of this country. Remittent fever has a wide range of character; modifications of the complaint occur without end, according to the organ or organs affected, the character of that affection, the constitution and habits of the patient, and the locality of his place of residence. In its severest form, the viscera of the three great cavities are implicated from the first onset of the disease, and there is no complaint in which the appearances on dissection may be so truly predicted.

Symptoms.—The disease begins, sometimes with great excitement and without rigor; on other occasions, the rigor is severe. Generally speaking, there is some previous indisposition, such as headache and giddiness; want of appetite; symptoms of indigestion; oppression at the præcordia; constipation of the bowels; a feeling of debility and fainting, and bad nights. Sometimes it happens that the patient dies before re-action takes place, but this is comparatively rare; sometimes cases occur where the seizure is sudden and unexpected,—the patient is struck down, as it were; he loses his senses; irritability of the stomach soon appears; black vomiting ensues, and he is carried off in the course of thirty-six hours. "It often occurred," says Dr Fergusson, "to a well-seasoned soldier, mounting the night-guard in perfect health, to be seized with furious delirium while standing sentry, and when carried to the barracks, to expire in all the horrors of the black vomit, within thirty hours from the first attack."

This, it must be confessed, is the most severe form of the disease.

There are many varieties, concerning each of which it is impossible to treat in a work like the present. The most frequent form of the disease, is that in which, after the rigor, which may be more or less severe, there quickly succeed violent re-action, heat of skin, and determination to the head, announced by the following well-marked symptoms; face flushed; conjunctiva injected, the eyes look heavy, and often feel burning; the expression of the countenance leads an experienced person to judge correctly of the severity of the attack. The respiration is hurried, and frequently laborious, often attended by cough, and the patient occasionally sighs, and seems to gasp for air. The head is thrown about from side to side; and the patient is excessively restless from anguish. Intolerance of light, and severe darting pains in the head, are sometimes complained of, as also in the small of the back and down the thighs. There is sometimes a burning pain in the pit of the stomach; exquisite tenderness in the right hypochondrium; unquenchable thirst, with incessant retching of every thing taken into the stomach. The fluid ejected is mixed sometimes with much bile, and accompanied with a discharge of flatus, belched up with great violence; the urine suppressed. The pulse is various even in people similar in age, constitution, strength, and habits; but in plethoric subjects who are seized soon after their arrival in warm climates, the pulse is quick, full, and bounding for a few hours at least, after the re-action is fully developed. In some it is quick and not strong, and in others it is not particularly quick, and it is sometimes very irregular. The tongue is furred, perhaps red, but soon becomes parched and dark-coloured.—These symptoms indicate the first stage of this fever. An anxious and distressed countenance, redness and sense of heat in the eyes, flushed face, intense headache, quick or laborious respiration, burning pain in the region of the stomach, with great thirst and excessive vomiting, announce a formidable disease; but, in my opinion, not so formidable and hopeless as another variety, in which there is some insensibility from the first, with coma, weak and oppressed pulse, and cold extremities.

The duration of the first stage is very uncertain. In severe cases it lasts from twelve to eighteen hours, but in those which are slighter, it may go on for three, four, or five days.

In the second stage the skin and eyes acquire a yellow tinge; the heat subsides; the head is confused, or delirium appears; the breathing becomes quicker and more anxious; the eyes begin to look glazed; the pulse sinks; the retchings are rather more violent; the matter vomited becomes thicker and begins to look dark; and if the person be sensible, he desponds; he occasionally falls asleep, but instantly awakes in great terror; sometimes he starts out of bed furiously delirious, but instantly falls down in a tremor upon the floor; the tongue is always parched, and in general covered with a dark fur; and the skin becomes clammy. In this stage, as well as in the first, there are often cramps in the belly and legs, which distress the patient much. The duration of this stage is also uncertain.

The first stage sometimes terminates by a remission of the more urgent symptoms, when the patient and his friends indulge the fond hope that he may recover; indeed, these remissions often occur, but the deception is soon manifested by the recurrence of all the symptoms in an aggravated degree. In the second stage there are remissions also, particularly towards its termination, when a hope of recovery is again entertained; for although the vomiting be more frequent and more copious, all uneasiness generally subsides, but the pulse sinks, becomes irregular, and intermits; although it sinks in strength, yet it increases in frequency. Nothing is retained in the stomach; the matter vomited is of a dark colour resembling coffee-grounds, and is termed the "black vomit." The breathing becomes more laborious; the tongue has perhaps lost its fur, it is shrunk, dry, and red; the eyes are sunk and glazed; the whole features are sharpened. As death approaches, the limbs become as cold as marble; there is a troublesome hiccup, which perhaps has existed throughout the whole of the second stage. Hæmorrhage sometimes takes place from different parts of the body; the abdomen is frequently as tense as a drum; and death steals on slowly, or takes place suddenly.

The symptoms in each of these stages must of course vary

much according as the brain, the lungs, and contents of the abdomen, are more or less affected. In some instances the functions of the brain remain undisturbed, even to the very conclusion of the last scene; at other times, when there is extensive disease within the head, the delirium is more or less ferocious, or the patient is comatose; he exhibits a variety of nervous symptoms, such as convulsions, rigidity of the extremities, tremors, subsultus tendinum, and picking the bed clothes. Where the head is more slightly affected, the senses are only occasionally obscured; the patient may be said to be lethargic rather than comatose; he is easily roused, and when roused his countenance has a drunken or besotted appearance.

If the lungs be affected, the breathing will be altered from that of health; mere dyspnœa may, however, exist, without any structural lesion of these organs. There may be cough also, attended or not with pain, followed by expectoration. I never saw a case of remittent fever in which the functions of the chylo-poietic viscera were not very seriously involved, as indicated by nausea and vomiting, thirst, pain in some region of the abdomen, meteorism, and altered condition of the stools.

It has been mentioned that the functions of the kidneys seem to be almost, if not altogether suspended, little or no urine being passed during the course of the disease; and upon dissection the bladder is usually found much contracted, as in Cholera.

Another variety frequently met with in very sickly seasons, is that in which a person, after passing several restless nights, is able to go through some of his duties for the first two or three mornings; but this costs him a very great effort. His weakness increases, the bowels are out of order and constipated, or after having been for some time so, he may now complain of diarrhœa; he feels alternate chills and heats, but the least exposure makes him complain of cold; his stomach now begins to get irritable, he takes to bed, the senses become rather obscured, the breathing is affected in no other way than being short, and he cannot, even when he makes an effort, distend his lungs freely; he complains most of oppression at the præcordia. Sometimes a remission of most of these symp-

toms take place, and his skin, which was never hot, and his pulse, which was never full, quick, and bounding, are now felt to be nearly natural; but in a few hours the symptoms become aggravated. The patient is more inclined to be comatose than restless; he complains now perhaps of violent pain in some region of the abdomen; the breathing is oppressed, the extremities cold and damp, while the surface of the abdomen and thorax is hotter than natural; hiccup comes on, the coldness steals onwards to the trunk, the pulse sinks, the countenance looks ghastly, and the patient's fate is quickly sealed.

In a work like this, it is impossible to describe all the varieties of remittent fever which occur in warm countries. It will be sufficient to repeat, that sometimes the brain is the organ chiefly affected, when the symptoms are what may be called cerebral and nervous. In another set of cases, the disease is concentrated on the lungs, when the symptoms will vary accordingly. In another set, the different organs within the abdomen may be affected, producing other varieties; and of these there may be various modifications and complications.

Appearances on Dissection.—These appearances vary much, according to the duration of the disease, and the organ which has been chiefly affected; some dying in the first stage, when we must not expect to see much, if any, appearance of inflammation. Some patients may have been largely depleted, and we shall therefore see less vascularity in their bodies than in those subjects who have lost no blood. Some individuals may have died of remittent fever, with organic lesions produced by previous diseases. All these circumstance must be kept in view when we are employed in the investigation of morbid appearances.

Some blood is generally found in the heart and large vessels near it, and also in the lungs, if the individual have not survived long, or been largely depleted. Pleuritic effusions are sometimes seen, and recent adhesions; the lungs themselves, in some instances, shew various stages of inflammation, and the bronchial tubes are extensively diseased. In the abdomen as in the thorax, various lesions are occasionally observed, viz. the results of peritoneal inflammation; mortification of the bowels;

the liver pulpy, sòft, very yellow, and easily broken down; sometimes its structure is completely destroyed, and it has been described by some authors to be in a state resembling "rotten cork." The spleen has been found altered in a similar manner. The stomach and bowels, when slit open, are found to contain more or less of the dark-coloured matter which has been vomited during life; and the mucous membrane very vascular, of a deep red colour, not in depending portions only, but over a great extent of surface, sometimes throughout the whole.

Until lately, it was not much the fashion to examine the mucous membranes minutely; and we still want information on the following points:—Whether the vessels which make such an appearance are in the mucous membrane or not? Whether the whole coats of the intestine are discoloured or not? Whether this colour is owing to inflammation or infiltration? At what particular points ulcerations are most frequently met with, together with a particular description of the appearances of the ulcerated surfaces, and the adjacent mucous membrane. And it would confer a lasting favour upon me, and a benefit on science, if some enthusiastic pathologist would take the trouble to inject portions with vermilion and size, and send them to this country, together with sketches shewing the recent vascular appearances; if to enrich my rapidly increasing museum, the greater obligation will be laid upon me, and no remuneration which it is in my power to bestow, will be thought too great a sacrifice for such a boon.*

Causes.—It has already been shewn that the extremes of cold and heat are not very productive sources of disease. Fevers are produced more by sudden changes of temperature, or by heat conjoined with moisture, than by heat itself, however intense. The state of the mind has also great influence, as well as the habits of the individual.

It has often been remarked, that there is great mortality among troops after their first arrival in a tropical climate. This is sometimes to be attributed to a want of due care on the part of Government, in choosing the season at which they ought

* It may be mentioned, that nothing affords me greater pleasure than to spend an hour in my museum with any pathological inquirer.

to arrive at their destination. I believe a greater number of men will be lost during the first twelve months, if they are landed at the beginning of the rainy season, than after its termination; perhaps the loss will be double. Great care should be taken in the selection of the troops; none but well-seasoned soldiers should be sent out. Sir George Ballingall has written very strongly and sensibly upon this subject, in his excellent work on some of the diseases incident to the troops in India. No young recruit should be sent out to be made a soldier; all his drills and exercises should be completed in this country.

When troops arrive in a distant country after a tedious voyage, it is natural to expect that they will indulge themselves in many ways beyond due bounds. Cheap new rum, and an abundant supply of delicious fruits, attract their attention, and do incalculable mischief. Some men leave England in the utmost state of despondency, and it will in general be observed that they are the first victims. New-comers are also apt to indulge in drinking too largely of cold fluids, and sitting in a thorough draft of air when the body is over-heated; in fact, it requires considerable time before a European obtains knowledge to manage himself properly. Some are fool-hardy, and take no care of themselves whatever; and I feel convinced, that an amusement in which young strangers too frequently indulge, known in the West Indies by the name of "*Dignity Balls*," causes many a death.

Many cases have come under my observation, in which fatal attacks of fever appeared to have been produced by inattention to the bowels; and I am convinced that it is a matter of the first importance to every one going to a warm climate, to keep his bowels open by gentle medicine. Repeated observation has induced me to believe, that a person may very often be exposed to any or all the causes of fever, even in the most unhealthy situations, without being affected, provided his bowels be in a proper state, his mind free from apprehension, and his habits good.

These are a few of the many causes of disease in warm countries, entirely independent of the influence of contagion, marsh miasm, and epidemic influence.

Pathology.—With respect to this part of the subject, I have little to say, except to refer to the general account already given of the pathology of fever. Remittent fevers have the same pathology as other fevers, only it will be found in general that the structure of more organs is involved than in the ordinary fevers of this country. But it may be stated, that no species of fever upholds the doctrines of Broussais more completely than the Remittent.

Treatment.—There have been as great revolutions in the treatment of the fevers of warm climates, as in that of any other class of diseases. The supporters of the doctrine of putridity have, of course, always avoided bleeding even in the first stage, when they admit the existence of inflammation, for fear of the debility which they expect in the latter stages. They begin by clearing out the primæ viæ, and then have recourse to bark in very large doses, without regard to the state of the stomach, local inflammations, or any other circumstances. This is the practice recommended by Clark, Lind, and others. They prescribed opium, for the purpose of keeping the bark upon the stomach, and gave wine and brandy in considerable quantities, with the view of supporting the strength, keeping off the stage of collapse, and preventing putridity. But it may be stated without fear of contradiction, that this practice cannot be too severely condemned. It should be recollected, that the stage of collapse must come on sooner or later. No person can pass from a state of fever into that of health and strength; and the longer it is postponed the worse will it be for the patient, whose situation very much resembles that of an individual in debt, who puts off the evil day from time to time by various means, and when his creditors meet at last, he is found without means to pay, whereas, had he disclosed his real situation sooner, the strength of his credit would have survived the shock without injury.

The late Dr Chisholm, about the year 1793, introduced the plan of affecting the system with mercury as speedily as possible, employing bleeding in small quantity, and only occasionally, more with a view of enabling the system to receive the mercury, than as a powerful measure calculated to subdue the diseased action. Now my recommendation would be the re-

verse, to use bleeding early, as the chief means, in cases which require depletion, and mercury afterwards as an auxiliary. The celebrated Dr Rush bled and gave calomel to diminish the increased action; and the reason this practice did not maintain its ground, is, that he trusted a little to the bleeding, and a little to the calomel, on the principle of gradually depleting the system. He rarely took more than ten ounces of blood at a time; and notwithstanding he repeated the bleedings from day to day, yet he never produced sufficiently decided effects upon the disease, although he sometimes took away from one hundred to one hundred and fifty ounces of blood. The practice would have been far more successful, had he taken away twenty, thirty, or forty ounces at once.

When bleeding is thought necessary in this disease, it is trifling with the patient's life if the blood be not allowed to flow till some impression is made upon the disease, and upon the system; and it is impossible to determine beforehand the quantity which will produce one or other of these effects. This is the kind of practice which was pursued by myself and many others who were in the West Indies nearly thirty years ago; and it appeared to be attended with great success.

Some practitioners trust almost exclusively to the action of mercury, and in India more particularly, it is deeply to be regretted that a great waste of human life has consequently taken place. Some years ago, Dr Halliday, of the Honourable East India Company service, was, by order of the Marquis of Hastings, put under arrest, and deprived of rank and pay, for shewing, by most incontrovertible evidence, that in the General Hospital of Calcutta, *the enormous quantity of* 26 *pounds of calomel were consumed by* 886 *patients:* And that under the painful digestion of this mineral, the proportion of deaths was 1 in about $6\frac{3}{4}$ of the whole sick list,—whilst under a more rational treatment the mortality was reduced about one-half: In fact, that the mortality bore almost an exact ratio with the quantity of calomel exhibited. After a delay of many years, Dr Halliday was restored to his rank by the express order, more than once repeated, of the India Directors. This transaction has never been brought before the British public, but having carefully perused all the evidence, I have no hesitation

in declaring, that as a piece of persecution, from beginning to end, there is no parallel case to be found in the annals of any free country. Wherever the story is known, it must cause a blot, never to be effaced, upon the memory of the then Governor-General of India and all his advisers, military as well as medical.* The result of the practice of the rising medical officers in India has fully corroborated the statements formerly made by Dr Halliday; and mercury is now not so much abused as it once was. And as pathological knowledge advances in India, which it is doing rapidly, mercury will be still less trusted to. It must be always kept in remembrance, however, that the liver suffers more frequently in the fevers of warm climates than in this country, and therefore mercury, under judicious management, cannot be altogether dispensed with.

In 1796, the deaths in the West Indies under Dr Chisholm's mercurial plan were never exceeded, amounting to nearly one half of the whole number of troops.

The bold and decisive use of the lancet in this disease has met with an able and influential advocate in Dr Jackson, who was Inspector of Army Hospitals in St Domingo, and subsequently in the Windward Islands. This distinguished individual bled to the extent of thirty, forty, fifty, sixty, and even eighty ounces at once in the very beginning; and he repeated the operation within three hours, if the first evacuation had not been productive of permanent benefit; after this he gave calomel in doses of from five to thirty grains, repeated every third or fourth hour.

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* The author regrets want of sufficient space to speak more fully of the transaction, but he cannot avoid annexing an extract from a letter addressed by the East India Directors to the Governor-General, after full investigation.—"In the mean time we authorize and direct you to remove the restrictions you have placed to the further employment of Dr Halliday, unless stronger objections shall exist to his restoration, than those which have been reported to us in the proceedings under consideration. It appears to us, that your interference in the professional discussions which were brought under your notice, has been carried further than is desirable, or consistent with the improvement of medical science." Notwithstanding this communication, Dr Halliday was doomed to undergo still further persecutions.

Bleeding has been strongly objected to, on account of the condition of the blood. In some cases it appears of a very dark colour, and streaked with red and blueish lines; it coagulates very imperfectly, sometimes not at all, and does not separate any serum. It is in the state commonly called "dissolved blood," and which announces, it is supposed, a putrid state of the whole body, and particularly of the fluids. This appearance does not deter me from recommending a repetition of the operation, as I have been long aware, that it exists more or less in all severe cases of congestion. It has been frequently seen by my pupils, in cases of intermittent fever, in which I bled in the cold stage; and also in cases of congestive fever. It has also been noticed in Asiatic cholera, and a similar condition of blood may be seen in patients affected with the common cholera of this country, and has been observed in some severe cases of bronchitis.

Dr Rush says he paid no attention to the dissolved state of the blood when it appeared on the first or second day of the disorder; but repeated the bleeding afterwards in every case where the pulse indicated it. He states a fact which I can verify, that it is common to see sizy blood succeed to that which was dissolved. He states also, that he was never deterred by the presence of petechiæ from blood-letting in cases in which the pulse retained its fulness or tension.

Although the necessity of keeping the bowels freely open in this class of diseases must be admitted, yet I had not been long in a warm climate before I observed the injurious consequences produced by strong drastic purgatives, and many individuals were lost by the constant irritation kept up by this means. The appearances on dissection, too, warrant me in cautioning practitioners not to persevere too long in using strong purgatives; there can be no advantage from moderating irritation and increased action, if these be immediately re-excited. The common purgative formerly used in the West Indies, was ten grains of calomel and a scruple of jalap. Emetics have been often extolled, but I believe every experienced tropical physician will agree with me in cautioning young practitioners against their indiscriminate employment; irritability of the stomach is one of the most frequent and

troublesome symptoms, and once excited, it is always difficult, in many cases impossible, to restrain it. I have seen emetics exhibited, and the vomiting has continued till death, in spite of every remedy. The same caution is necessary with regard to those remedies that are employed for moderating the action of the heart and arteries. When in the West Indies, I have often regretted not having a command of leeches, and am persuaded, that upon a proper representation, the Government would take steps, at whatever expense, to secure a proper supply to the medical officers of the army and navy. There is no disease in which dissection reveals so many organic lesions, and the efficacy of abstracting blood in such cases by leeches is generally admitted, particularly after the severity of the disease has been broken by the lancet.

After the publication of Dr Currie's work, Cold Affusion became generally used in remittent fevers, but much mischief followed, and it has fallen into disuse. Dr Currie has distinctly stated, that it is not admissible in cases where there is any internal inflammation; therefore, in the majority of cases of the fever now under consideration, the practice will be found to be injurious rather than beneficial. But when the skin is dry and burning, nothing gives the patient more temporary relief, than spunging the body with water, or vinegar and water, which ought to be very frequently repeated.

The application of blisters and other contra-irritants are highly serviceable after bleeding, &c. but should never be had recourse to in this, or any other fever, in the early stage of the disease.

Stimulants sometimes appear to save life, but in candour it must be mentioned that I have also seen them very prejudicial; nothing in the whole practice of physic requires more caution and experience than their exhibition; but I shall speak more fully upon this subject when treating of the fevers which prevail in this country. The best stimulants are wine and brandy; in many cases where the stomach is irritable, brandy will be found to be superior to wine. In the last stage, great care should be taken to support the heat of the extremities.

Partly from the notion of the resemblance between remit-

tent and intermittent fevers, and partly from this disease being supposed to be one of putridity, bark has been employed. By some it is recommended throughout the whole course of the disease, by others only during the remissions, and in the last stage; but I believe it has done more mischief than good. I have often had to blame myself for bringing on an exacerbation, not only by the use of bark, but by nourishment and stimulants, during the first remissions; and a strong impression is left upon my mind, that it would be better for patients if less were done for them in the state of apyrexia, and also in the commencement of convalescence. No doubt, however, can be entertained, that the sulphate of quinine will be of signal service in many cases.

INFANTILE REMITTENT.

Many diseases occurring in infancy and childhood have obtained this name, viz. inflammation of the brain and lungs, the irritative fever produced by teething and worms, rheumatic affections, &c.; in all of which, and even in cerebral and pulmonary inflammations, there are very remarkable remissions in young subjects. But the disease which is to be considered in this section is a febrile affection, which is in general found to depend on irritation, inflammation, or ulceration of the mucous membrane of the stomach and bowels.

Symptoms.—The little subject is observed to be listless, fretful, and thirsty, and to pass restless nights, with some heat of skin. In a few days the skin is hot and dry, the thirst and restlessness are increased, the breathing is hurried, and the pulse very quick. The child is more uneasy and restless at night, but towards morning the skin becomes slightly moist, when it has some disturbed sleep; the bowels are constipated, or there is diarrhœa, but the former is more frequently met with; or there is frequent desire to go to stool, but little is passed; if there be any evacuation, it is discoloured and fetid. In colour, the evacuations are not always dark, but sometimes white, shewing a deficiency of bile, and sometimes blueish, but always offensive, often mixed with mucus, and occasionally with a little blood. The child cries frequently,

and draws its knees up to the breast,—it cries more when the belly is touched, which is hotter than the rest of the body, and tympanitic. It prefers to drink cold water, and frequently shews signs of increased abdominal pain after a copious draught; the stomach is occasionally very irritable, and every thing is vomited; the tongue, being at first moist and loaded, and occasionally very red round the edges, soon becomes dry over a triangular space at the tip. On some occasions it is difficult to keep the hands and feet sufficiently warm, while the face is flushed and the rest of the body parched.

If proper treatment be not soon pursued, the functions of the brain occasionally become disturbed, and it is difficult, in many cases impossible, to determine whether or not disease of structure is going on in the head.

On other occasions the respiration, which has been hurried from the first, owing perhaps merely to increased circulation through the lungs, becomes laborious, a troublesome short cough also appears, and, in general, auscultation will announce a more or less extensive inflammation of the bronchial membrane; and if the disease be not subdued, wheezing and expectoration follow. Sometimes the child appears to be recovering for a few weeks, and then relapses; during the remissions he gains flesh and strength, but the abdomen remains tumid, and in this condition he may continue getting better and worse till the mesenteric glands become enlarged, or dropsical effusion takes place in the abdomen; the emaciation increases; there is no fever except at night; the appetite is occasionally voracious. In fact, the little sufferer presents all the symptoms of the disease usually known by the name of *Tabes Mesenterica.*

Appearances on Dissection.—The chief traces of disease are found in the abdomen. Sometimes peritoneal inflammation seems to have been the immediate cause of death, and I have had many opportunities of ascertaining that inflammation of this tissue has been excited by the extension of ulceration from the mucous membrane, through the muscular and serous tissues. The mesenteric glands are found very generally enlarged, sometimes enormously so, and seem to consist of a cheesy-looking matter, which is usually described as depend-

ing on scrofulous action, but perhaps hastily, and without good foundation. On cutting into the stomach and bowels, the mucous membrane will be found in various conditions, occasionally very vascular, thickened, softened, or ulcerated. The ulcerations in the ilium and colon strictly resemble those which I have afterwards to describe in the bowel-complaints of children, except that the whole mucous surface of the colon is occasionally involved in one sheet of ulceration, with a rough and ragged surface and hypertrophy of the other coats, as is observed in many cases of phthisis pulmonalis. When there is no ulceration, we sometimes see mere vascularity, with or without softening of the mucous membrane; the quantity of thick mucus adhering firmly to the surface is very great; and it is curious, that after being carefully removed by washing and wiping, I have seen fresh exudations take place during maceration, not only in water, but in spirits; and I have been surprised, after having laid aside preparations for many months, to find them again thickly coated over with mucus. Large abrasions are also sometimes found in the mucous membrane of the stomach, at the splenic extremity, which have penetrated through all the tissues at one point; in other places they appeared to be converted into a gelatinous mass. From careful examination, it would seem that this kind of disorganization is the effect of previous inflammation. This appearance has excited considerable interest of late years, and has been noticed on the Continent by Cruveilheir and others, and in this country, many years ago, by Underwood. The Profession stands greatly indebted to Dr John Gairdner of Edinburgh, who has collected a great number of interesting cases, some of which occurred in his own practice, and which will be found in the first and second volumes of the Medico-Chirurgical Transactions of Edinburgh.

It has been stated in the description of the complaint, that symptoms of cerebral and pulmonary disease sometimes become lighted up; but on watching the progress of the affection, these are observed not to form essential parts of it; nevertheless, the appearances sometimes found in the head and thorax, deserve to be mentioned.

In the head there is generally effusion in the ventricles,

and also between the arachnoid and pia mater, with great vascularity in the latter membrane.

In the thorax, the most common morbid appearance is found in the bronchial membrane, which is vascular, and the tubes are more or less filled with mucus; which is to be described more particularly when treating of bronchitis. The substance of the lungs also shews various degrees of inflammation, and occasionally there are traces of pleuritis.

Causes.—These are indigestible food, such as crude vegetables, sweet-meats, &c.; the habit of allowing children to eat too many articles of food at one meal; together with insufficient clothing and unwholesome food, to which the children of the poor are so frequently exposed. Teething sometimes produces symptoms like those above described.

Pathological Remarks.—From this view of the phenomena of the disease, together with the appearances on dissection, and the causes, the reader will have anticipated what I have to state respecting the nature and seat of the disease, that it depends on irritation and inflammation of the mucous membrane of the stomach and bowels, particularly of the latter.

Treatment.—Abstinence from solid food is necessary; even biscuits, crusts of bread, and the pulp of oranges, frequently produce relapses. Leeches should be applied to the abdomen in all cases where there is much vascular action, pain, or heat of skin, if gentle laxatives, frequently repeated, do not mitigate the symptoms. Fomentations should be applied to the abdomen; when the skin is hot and parched, sponging the body frequently with tepid water will often take off the restlessness. The practitioner should be particular in all cases, but more especially in attending children, to examine the stools, and the quantity of clothes with which they are too often covered. A remarkable case occurred to me four or five years ago, which is worthy of being mentioned. A child aged seven was seized with some degree of chilliness, followed by re-action, thirst, want of appetite, nausea; the respiration became hurried, and he complained of considerable headache. He was ill for five or six days before I saw him, and had taken repeated doses of salts and senna. On examination, I found the abdomen distended, tense, tympanitic, and some-

what painful to the touch; his thirst was considerable, the respiration quick, the face flushed, with some headache, and he complained of noise and light; the tongue loaded with a white fur, moist every where but at a small triangular space at the tip, which was red, as were also the edges; he had no vomiting, but a dislike even to the smell of solid food; he was very uneasy and restless, passed sleepless nights, and the pulse was quick, but not particularly strong. During the course of eight days, leeches and fomentations were frequently had recourse to, and with marked relief, but always of short duration. Gentle laxatives were frequently given, and injections administered, but all to no purpose; the stools were slimy and scanty, and as the child had been so long without even taking gruel, it was imagined that the bowels were empty. The abdomen was blistered. At last, something excited my suspicion respecting the state of the bowels, and castor oil was given on the fourteenth day, every second or third hour, after a moderate dose of calomel and jalap. On going to stool, he complained very much of pain; he was observed to strain most violently; and after some time, he passed what appeared to be a very large fetid stool, which surprised me very much; it was so large that I was induced to examine it minutely, when three hard masses were discovered, surrounded with a great quantity of mucus. Upon close examination, they proved to be a dollar biscuit, and two pieces of solid meat; the biscuit was soft, but quite undigested and whole, with the exception of its margin, part of which had been broken off; the depressions generally made on the surface of biscuits were quite distinct, as also several of the letters of the baker's name. This biscuit was seen by a great number of gentlemen who were attending my lectures at the time, and is now in my museum. One piece of meat was large, and must have formed a good mouthful; the other was small, but both were quite unchanged by digestion, and not so putrid as might have been expected. It appeared that the boy was frequently in the habit of *bolting* whatever he had in his mouth, without mastication. His recovery was progressive after he got rid of these substances.

If the disease become chronic, occasional leeching, perseve-

rance in gentle laxatives, a nourishing, but mild and bland diet, a long perseverance in contro-irritation on the surface of the abdomen, by means of the tartar-emetic ointment, and an occasional warm bath, are the best remedies. If there are evidences of effusion into the abdomen, with scanty secretion of urine, a preparation of calomel, squills, and digitalis, in doses proportioned to the age and strength of the patient, will be found serviceable, together with drinks acidulated with cream of tartar. Many of the students attending my Dispensary, have seen remarkable recoveries under the plan of treatment above described, even in cases which at first appeared to be almost hopeless.

CONTINUED FEVER.

Cullen and others maintain, "that there is no such disease as that which the schools have called a Continued Fever." There can be no doubt, however, that there is such a class of diseases, if we look at nature; and that Cullen would have seen it if he could have looked through any other medium than that of his own erroneous theories. Cullen's definition—"*Fevers, without intermission, and without being produced by marsh miasmata, but with remissions and exacerbations, though not always considerable, continuing; two paroxysms in each day.*"

Although all his definitions are bad, this is to be regarded as almost the very worst. Often have I seen slight continued fevers terminate in regular intermittent, and intermittent in continued fever, at least as much as any fever can be said to be continued; continued until death closed the scene, or rather, I should have said, till that stage of collapse took place which precedes death. This definition must be admitted to be too fine-spun; for if there be no continued fever, it may be also said there is no continued inflammation of the brain, or of any other organ. In all fevers, as in all diseases, there are intervals in which the patient is easier, and appears,

perhaps, rather better; and there are also nocturnal exacerbations, which may be partly attributed to the sick being worn out and made worse by fatigue, heat, light, and noise during the previous day.

All the fevers which are to be described in this class, are called "idiopathic," as well by those writers who have identified in their own minds fever with inflammation, but who will not allow the existence of "*any primary local disease*," unless that disease be one of inflammation, as by others, who deny the existence of local inflammation in fever. Cullen belonged to this last class, and he states that he never had seen a case of inflammatory fever but one, therefore he endeavoured to place these fevers altogether beyond the pale of pathology. In this spirit has he framed the definition of fevers: "*After languor, lassitude, and other signs of debility, pyrexia; without any primary local disease.*" The reader will see at once the absurdity of this symptomatical pathology, which denies to any fever whatever, except hectic, any primary local disease; for Cullen is subsequently compelled to place inflammatory fever as one of his orders, and although he gives a very common-place reason for calling inflammatory fever "*synocha*," and an explanation that this term is not to be used in its "*vulgar acceptation*;" yet we are not to be told in the present day, that the pathology of a disease can be changed by a mere name, which any one may invent. All Cullen's disciples will be found to fall into the same error, but they become caught in their own net in describing the order Synochus, which, according to them, is a compound fever, of an inflammatory nature in the first stage, and typhoid in the second.

Cullen, in the 141st paragraph, makes the following statement:

"In the case of synocha, *(inflammatory fever)* therefore, there is little doubt about the propriety of blood-letting; but there are other species of fever, as the synochus, in which a violent re-action and phlogistic diathesis appear, and prevail during some part of the course of the disease; while, at the same time, these circumstances do not constitute the principal part of the disease, nor are to be expected to continue during the whole course of it; and it is well known, that in many cases the state of violent re-action is to be succeeded, sooner or later, by a state of debility, from the excess of which the danger of the disease is chiefly

to arise. It is therefore necessary, that in many cases blood-letting should be avoided; *and even although, during the inflammatory state of the disease*, it may be proper, it will be necessary to take care that the evacuation be not so large as to increase the state of debility which *is to follow*."

It was Dr Baillie's opinion, that typhus was as rare as Cullen states inflammatory fever to be. The truth is, that much depends upon the class of people among whom a physician practises, and the period of the disease at which he generally sees his patients. Our army and navy surgeons have to treat fevers in subjects well fed and clothed, and whose regularity of conduct is enforced by military discipline, which physicians cannot expect among the inhabitants of St Giles in London, and the Cowgate in Edinburgh. Therefore they seldom see pure typhus in their practice; and they will have to blame themselves if they often meet with synochus; for they are too bold and intelligent, and are too well versed in military tactics, not to attack the enemy before he gets possession of their strongholds; and they will rarely be found guilty of declining an engagement for fear of another enemy which *may* appear when they are weakened by the combat. Soldiers and sailors can very rarely conceal a fever; so that they are brought at once to the medical officers, who therefore see the disease early, and before it becomes complicated. A great deal also depends upon the treatment pursued in the first stage. If a physician were always afraid in the first stage of fevers to apply the proper remedies, when inflammatory symptoms presented themselves, lest a low or putrid tendency should subsequently occur, he will of course frequently see the compound fever "synochus" in its worst form.

I have now to treat, *first*, of fever from functional derangement; *secondly*, fever from inflammation; *thirdly*, fever from congestion; *fourthly*, a mixed form of fever, consisting of a combination of these three, but in which congestion generally predominates at last, commonly called Typhus and Synochus.

FEVER FROM FUNCTIONAL DERANGEMENT.

All ages and classes of society are liable to this form of fever; but more particularly children, and those who have the inclination and means to overload the stomach and bowels

with too much nourishment. It is not, in general, very formidable; but cases are occasionally met with which are abundantly alarming, and difficult to treat, from the impossibility of fixing upon any one organ which can be said to be affected severely, and yet all organs are out of order, giving rise to considerable constitutional disturbance. In some cases the symptoms are exceedingly slight for a week or ten days. The patient often feels chilly, which he is apt to attribute to the weather—increasing weakness and languor, which he thinks are owing to impaired appetite; he has restless nights, with burning heat in his hands and feet, and some thirst. At last his whole surface is hot; he perhaps goes to stool once a-day or even twice, and he passes something, which satisfies him that his bowels are right, when all the time they are constipated; and when a medical man is called, he will find him much in the following state:—skin parched; thirst considerable; tongue loaded with a yellow fur; without appetite; and the pulse perhaps about 95 or upwards; the urine scanty and high coloured. He complains of restlessness, particularly at night; and general uneasiness, with oppression at the præcordia; he has slight headache; but complains most of pain in the lumbar region. The stools, when examined, will be found fetid, scanty, and adhesive; or watery and dark coloured, containing small hardened portions of feces, often mixed with a good deal of mucus. He loathes the articles of food which in a state of health he most relished, even tea and coffee, milk, beer, &c. During the night, his mind wavers; if he fall asleep, he appears restless and disturbed, and awakens with a start, the effect perhaps of a terrific dream; occasionally there is delirium. In some cases these symptoms continue even in a slighter degree for fourteen or fifteen days, and at last terminate in local congestion, or in inflammation of some organ, and in the end assume the type which is termed typhoid; in fact, these are the cases, particularly where there is delirium, which many people call "typhus mitior."

Sometimes the fever is very sharp, and there is considerable excitement, with increased heat, general uneasiness, and delirium; the pulse above 100, full and strong; much oppression at the præcordia; the respiration hurried; the tongue loaded,

perhaps dry and parched; and the bowels very much disordered.

Treatment.—I have a great dislike to treat this form of fever, and for the following reasons: First, the patient has been long ill before he confined himself and sought for medical advice. Secondly, the symptoms even then are apparently mild, while internal organs are seriously impeded in their functions. Thirdly, if inflammation have taken place in any internal organ, it is more difficult to treat than in pure inflammatory fever, in consequence of the exhaustion occasioned by the previous indisposition. Fourthly, nothing can be beneficial if the greatest attention be not paid to the moral management of the patient, giving him laxative medicines at regular periods, and rigidly withholding improper articles of food. This is the kind of fever which is in general cured by confinement to bed; a steady perseverance in gentle laxatives, repeated two, three, and even four times a-day; quietness, and abstinence from solid food. These are the cases in which wine is often prescribed by Brunonians, with far less detriment than solid food or beef tea. These are the cases in which the cold affusion has been so serviceable when used in the early stage, because there is as yet no local inflammation.

Bleeding is certainly not necessary in all cases, but it is serviceable in many. I have had several cases of this description on my hands at one time during the autumnal months; and I have chosen patients resembling each other as closely as possible in habits, temperament, &c. Blood has been drawn from some of these and not from others, and I never had reason to regret bleeding, but have often had to lament not doing it. It may be here mentioned, that bleeding is often employed from other motives than to cure inflammation. It is sometimes employed to moderate excitement, to diminish plethora, to alter irregular determinations of blood, and also to remove venous engorgements; but the only period for the lancet is the first days of the disease.

In such cases bleeding may be objected to, as it has been even in inflammatory fevers, but I am sure it is safe in a majority of cases; and this conclusion has been strongly impressed upon me by observing the manner in which this kind

of fever, in particular, frequently terminates. First, it sometimes terminates upon the appearance of an eruption, which eruption is generally urticaria, sometimes erysipelas. Secondly, it often terminates by epistaxis. Thirdly, by diarrhœa. Fourthly, by profuse night-sweats. And fifthly, by small boils, and even abscess. Taking a common-sense view, in reflecting upon these matters, I cannot help coming to the conclusion, that it is best for the practitioner to take the law into his own hand, and to deplete in cases which require it, before the strength of the body is reduced by the natural effects of diseased action. If in doubt about the propriety of general bleeding, the practitioner can have recourse to leeching; and in the class of cases now under consideration, the best place to apply the leeches is upon the abdomen or loins. Experience has led me to this practice, even in cases, in which, although the symptoms ran high, no local inflammation could be detected, and I can speak strongly of its success;—the number of leeches to be proportioned to the age and constitution of the patient, as well as the severity and duration of the disease. Emetics are very serviceable in the first stage of this fever, in order to unload the stomach of any crudities it may contain. It has been already stated, that laxatives frequently repeated are highly necessary:—to an adult I give powders consisting of two grains of calomel, and six or eight of jalap or rhubarb, or a pill with the same quantity of calomel and four grains of the compound extract of colocynth. A child of six years old will require the same quantity of calomel, and four grains of jalap or rhubarb, —the dose to be repeated every second, third, or fourth hour, according to circumstances, till evacuations are produced, or till a fourth dose has been given, when the medicine is to be assisted by the administration of mild injections. Fomentations may also be applied to the abdomen. If the body be hot, it should be spunged with cold or tepid water, as may be most agreeable to the patient's feelings. Opiates are rarely admissible in this form of fever.

In neglected, or ill-treated cases of this class of fevers, affections of the brain, or bronchial membrane, are greatly to be dreaded.

FEVER FROM INFLAMMATION.

It will be recollected that, in a former part of the work, the arbitrary doctrines of fever promulgated by different individuals, viz. that fever depended upon inflammation of one particular viscus or set of viscera, were rejected; and my own opinion was distinctly stated, that inflammation of every tissue of the body, occasionally gave rise to febrile disease.

Symptoms of Inflammatory Fever.—In this disease the combination of symptoms denominated fever is present, and depends upon inflammation of an acute or sub-acute nature, of some organ or tissue of the body. Cullen's definition: "*Heat much increased; pulse frequent, strong, and hard; urine red; the animal functions but little disturbed.*"

Although this fever sometimes takes place without any cold stage, yet it is generally ushered in with a rigor. During the early stage, the patient feels drowsy, yet cannot sleep; he is reluctant to move from one room to another, from a feeling of languor and debility; there are loss of appetite, vitiated taste, thirst, loaded but moist tongue, which soon becomes dry; general soreness is complained of, and there are nausea and vomiting; headache, and pain in the back; occasionally a combination of all these symptoms is present. Sometimes after the first rigor, heat of skin, and all the other symptoms of fever, immediately set in; on other occasions, there are alternate chills and flushes of heat for several days, till at last the heat predominates, and is permanent; the face is flushed, the skin intensely hot, with thirst, restlessness, general uneasiness; in most cases there is more or less delirium at night.

It is necessary to observe, that the symptoms vary according to the organ principally affected; but in all cases where there is great excitement, the breathing is quick and anxious, the belly costive; the tongue becomes parched, but it may be loaded, or very red, with its papillæ much raised,—or intensely red only at the tip and round the edges; the pulse is generally full, strong, and bounding, beating above 100, perhaps even 130 in the minute; there is also oppression at the præcordia. In very acute cases, the skin has been observed to be

not only parched and burning, but red, making a considerable approach towards an exanthematous affection.

Inflammatory fevers occasionally terminate by hemorrhages from different parts of the body, particularly from the vessels of the nose and bowels; by diarrhœa,—collections of matter in various parts of the sub-cutaneous cellular membrane, and by profuse sweats. But these natural terminations are not to be depended upon.

If the fever go on without proper treatment, disease of structure ultimately takes place, in severe cases as early as the seventh or eighth day; in slighter, not before the twelfth or fifteenth; and in still slighter, not till between the twentieth and thirtieth. Whenever this event happens, all the symptoms of typhus gravior, with petechiæ, &c. take place, and then the case is called synochus. It has been stated that the symptoms vary not only according to the nature, but more particularly the seat of the disease; and it is necessary in this place to give a description of these, which may be made applicable to the other kinds of fever.

There are several general symptoms which are common to a great number and variety of diseases; as headache, heat and dryness of skin, thirst, nausea, restlessness, anxiety, oppression at the præcordia, dyspnœa, scanty urine, small fetid stools, &c.; but there are some symptoms which particularly announce disease of particular parts.

If the brain be affected with inflammation, the symptoms will vary according as the inflammation affects the membranes, or the substance of the brain itself. If the membranes, there will in general be delirium, increase of strength, so much so, that it will require some care to keep the patient from starting out of bed; the eyes vascular, with the pupils contracted or dilated, and the countenance may present a ferocious expression; the patient will perhaps complain of pain of head, by gesture if he cannot by words; the carotids will throb, there will be great restlessness. The face is not always flushed, it is sometimes pale; the pulse will be various, the tongue dry, and perhaps in constant motion. Subsequently starting of the tendons, picking the bed-clothes, and sometimes convulsions, take place, particularly in young subjects; the patient shews a dis-

position to sleep, and then becomes comatose, which state gradually increases; the pupils are dilated, and squinting often occurs. The respiration becomes more and more rapid and irregular, with an occasional interruption, immediately followed by a sigh; the pulse, which had been quick at first, and had afterwards become slower, is now again rising in frequency; it is irregular, and intermits. The coma becomes more profound, and death takes place, with or without convulsions.

If the substance of the brain be inflamed, the heat of skin may not be increased, the pulse may fall under the natural standard; perhaps it will beat 60 or 50, and I have seen it even slower. The extremities may be in constant motion or not; they may be rigidly contracted, particularly the fore-arms, or if not so, they become contracted the moment the arm is touched even to feel the pulse. The rigidity may be confined to one arm with or without paralysis; the pupils are generally dilated, and the eye-lids half or fully open, sometimes one is shut and the other open; the tongue is not dry till towards the last stage of the disease.

In both varieties the respiration is much in the same state. The bowels are generally bound, and when stools are procured, they are passed involuntarily in bed, as is the urine; sometimes the bladder loses its powers completely, and becomes greatly distended.

If the lungs be affected, the respiration will become more laborious; there may be cough, with more or less expectoration; the patient may complain of a sensation of rawness under the sternum and in the windpipe, or perhaps a stitch in the side may be felt; but here, as in all affections of the chest, we must make use of our ears in addition to the other symptoms, in order to discover whether any inflammatory affection is going on in the respiratory organs. The advantages of the grand discovery of auscultation will be stated more at large when treating of the diseases of the chest; but it may be now mentioned, that even before I had been much used to the stethescope, I was able to point out "*primary local affection*" to exist in the lungs, in cases which were supposed to present the pure idiopathic fever.

If the seat of the inflammation be within the abdomen, it will in general be announced by one or more of the following symptoms,—pain, increased on pressure; but it must be remarked, that when the mucous membrane of the intestines is the seat of the phlogosis, frequently little or no pain is experienced even upon pressure. The patient will prefer that position in which the abdominal parietes are most relaxed; there is more or less tympanitis; and the heat is greater over that part of the body than any other. Nausea and vomiting are more or less severe; the patient drinks large quantities of cold fluid, although he knows it will produce an increase of pain, and perhaps will be immediately vomited. The most extensive inflammation, and disorganizations of various kinds, may be going on in the mucous membrane of the stomach, and bowels, without producing redness of the tongue or elevation of the papillæ. Nevertheless, when the tongue is in that condition, or when it is covered with small ulcers, or numerous fissures, or when it looks red and glazed, or as if skinned, with or without patches of white fur, we are enabled to determine that the lining membrane of the alimentary canal is in a diseased condition.

Appearances on Dissection.—It may safely be said that there is not an organ or tissue of the body which has not been seen disorganized in fevers, and particularly in inflammatory fevers; and after what has been stated, and from circumstances which are still to be stated, it is thought unnecessary to dwell at present on this subject.

Treatment of Inflammatory Fever.—Sydenham, whose works are among the greatest ornaments which medical literature possesses, recommended, above a hundred and sixty years ago, the same, or nearly the same practice, which stands good in the present day. He was led by his great wisdom and experience into a proper line of treatment, although he had not the advantage which we enjoy, of examining morbid appearances after death, to confirm his views. He had erroneous notions, it is true, in consequence of his imperfect acquaintance with morbid anatomy, but he was the first who pointed out the impropriety of treating all fevers alike, by shewing that different organs are affected in different cases. He point-

ed out also very precisely, that a fever requires different treatment in every stage as it advances. He likewise made pointed observations against the farrago of medicines which were generally prescribed, and his own plans were exceedingly simple. It was he who first introduced the plan of purging in fevers. His chief hope seems to have been on the lancet, laxatives, and opiates, the strict antiphlogistic diet, and allowing no solid food. If he could have proved his opinions by an appeal to dissections, it is probable there would not have since been so many changes in practice.

An emetic, followed by gentle laxatives; a bland liquid diet; small doses of the solution of the tartrate of antimony; and perfect quietness, will produce a cure in very slight cases. But in severe cases, it is necessary to open a vein, and take away as much blood as will make an impression upon the disease, without reference to quantity. Young practitioners are often prevented from using the lancet, because there is no decided fixed pain; but they may rest assured, that in fevers, and more particularly in inflammatory fevers, some internal part in particular is suffering, although it does not exactly appear to their inexperienced eyes. Local inflammation is often concealed by the general irritation and uneasiness which prevails; and it does not shew itself to a superficial observer till it has become very severe. But we must not bleed in the manner recommended by the French, at least in inflammatory fevers. Boisseau, urging the necessity of general bleeding, says, p. 99. of his work entitled Pyretologie Physiologique, Ed. 1824. "Less than 8 ounces should not be taken at each operation; but this quantity will rarely suffice, it is necessary in general to draw 12 ounces; one may carry it even to 16 ounces, in subjects of whom I shall speak, *but one ought never to exceed this quantity. It is better to repeat the bleeding.*" I would also beg to refer to the cases and dissections published by M. Andral, in the 1st vol. of his Clinique, in which the deplorable effects of similar undecided practice are too evident to require being pointed out.

The causes of the failure of bleeding in this, and other diseases, are: *First*, Most physicians order the precise quantity of twelve or sixteen ounces of blood to be taken from all adults,

without reference to sex, age, peculiarities of constitution, or the actual pathology of the disease. *Secondly*, By the long period which is allowed to elapse between the bleedings, the strength is diminished, valuable time is lost that cannot be recalled, while little progress is made in eradicating the disease. *Thirdly*, No difference is in general made between bleeding a plethoric individual, and one who is in the opposite condition of system. *Fourthly*, The period of the disease influences a pathological physician, while it does not one who never looks at the inside of a dead body. *Fifthly*, The good effects of a general bleeding are very frequently lost, by not following it up, in proper time, by a second evacuation; or *by local bleedings*, which are often found to be most efficacious. *Sixthly*, The good effects of bleeding are often marred by neglecting to employ contro-stimulation, and contro-irritation, as well as by loading the patient with too many bed-clothes, and by errors of diet.

The patient should be seen within a few hours after the first bleeding, and the operation should be repeated at a short interval, if necessary. If this be done, particularly if followed by laxatives, blisters, and the use of the tartar-emetic, it will rarely be necessary in an inflammatory fever, however acute, to bleed a third time. But if, at the second or third visit, we find the patient so well as not to require further loss of blood, we are not to conclude that he is out of danger; and it is necessary to impress upon the minds of students and young practitioners, that if they are to do good in such a case, the greatest attention must be paid at the very commencement of the disease: vigilance at this period will save much subsequent trouble and anxiety. When leeches are necessary, they should be applied as near the affected organ as possible. With regard to antimony, objections are very justly entertained against its use, when the stomach and bowels are either irritated or inflamed.

Some practitioners do not allow their patients to use fluids freely, particularly cold drinks; but I believe this is a most injudicious prohibition, and that they may, in general, be allowed to gratify themselves in this respect.

The practitioner should be regular in his visits in all acute

cases, as sick people watch the hours, and become impatient and dissatisfied till he makes his appearance; and he should be careful how he expresses himself, for one word, or even a slight alteration of countenance, may rob the patient of all hope.

When the state of collapse comes on in fever, the patient should be carefully watched, that he may have his nourishment and medicines at proper intervals, and that the heat of the body may be properly supported.

Stimulants are frequently necessary at the termination of this class of fevers; but nothing in the Practice of Medicine is more difficult than to determine, whether a stimulant given in such a case is to do harm or good. When it is given, let it be in small quantity, closely watching the effect. If I were compelled to state, whether more mischief would follow the exhibition of stimulants in every case, or withholding them, I could safely say, that giving them in every case would be highly prejudicial. For although marked benefit is sometimes produced by stimulants, yet I have more frequently observed mischief; they are most beneficial when exhibited to patients with either a compressible, or a very quick and irritable pulse, and to those who experience profuse perspirations.

CONGESTIVE FEVER.

This is a fever, in the most severe form of which the pulse and the heat of the skin are generally below the natural standard. In slighter cases, the extremities are cold, or have a tendency to be cold, while the heat of the trunk of the body is increased. The best examples of congestive disease, are to be found in those individuals who die in the cold stage of the intermittent and yellow fevers.* The existence of congestion is well displayed in the first stage of intermittent fever; and I have seen many cases of pure congestive fever succeed the

* Before I had an opportunity of seeing the true Asiatic cholera, and examining into its nature and seat, I was led to suppose it to be the purest example of congestive disease. But I shall show the error of this opinion when treating of that disease in the proper place.

cold stage of an intermittent, when full re-action could not develope itself.

Congestive fever is a common form of disease in this climate, and is usually denominated "typhus." It is a disease which Sydenham knew well, and treated in the most judicious manner, as will be seen by consulting Swan's edition, p. 567. After stating that the invention of the term "malignity," has been far more destructive to mankind than that of gunpowder, he describes as decided a case of congestive fever, as is to be found in any modern work.

This case proves, beyond all doubt, that Sydenham must have had very good notions of the pathological condition of the body, from the expressions he uses, as well as from the practice he employed.

"But if it be inferred," says Sydenham, "that there is some malignity in the case, not only from the purple spots, but also from finding the symptoms of fever milder sometimes than should seem agreeable to its nature, whilst, notwithstanding, the patient is more debilitated than could be expected for the time,—I answer, that all these symptoms only proceed from Nature's being, in a manner, oppressed and overcome by the first attack of the disease, so as not to be able to raise regular symptoms adequate to the violence of the fever; all appearances being quite irregular. From the animal economy being disordered, and in a manner destroyed, the fever is thereby depressed, which in the true natural order generally rises high. I remember to have met with an instance of this kind, several years ago, in a young man I then attended; for though he seemed in a manner expiring, the outward parts felt so cool, that I could not persuade the attendants he had a fever which could not disengage and shew itself clearly, because the vessels were so full as to obstruct the motion of the blood. However, I said that they would soon see the fever rise high enough upon bleeding him. Accordingly, after taking away a large quantity of blood, as violent a fever appeared as I ever met with, and did not go off till bleeding had been used three or four times."

This disease has been described by several tropical physicians, but particularly by Dr Jackson; and it was in warm climates that I first obtained correct notions upon the subject. But the profession is much indebted to the late Dr Armstrong, for the very excellent manner in which he has illustrated its nature and treatment.

Symptoms of Congestive Fever.—We shall find, upon inquiry, that the patient has had a threatening of indisposition for perhaps ten days, a fortnight, or even three weeks, pre-

viously to confining himself,—that his appetite has been gradually impaired, with irregular action of the bowels; and that he has occasionally complained of alternate chills and flushes of heat, till at length the chilliness prevailed. This is the history which we in general receive of the progress of the severe cases. Even in mild cases, the heat of the skin is diminished; the pulse is weakened, or it is oppressed, and beats perhaps not more than 50 or 60; the prostration of strength is very considerable; the tongue is in general moist, and more or less loaded; the patient is lethargic, rather than comatose, though coma may subsequently take place; he can be roused, but the sensibility is evidently diminished; he complains of giddiness, confusion of intellect, heaviness, pain or sense of weight, either at the crown of the head or forehead. The general functions of the body will be found to be more or less impeded; but disturbance of some particular organ, in general, manifests itself, and the symptoms must of course be thereby considerably modified, as in other febrile diseases. In congestive fever, as well as in others, the brain may be the seat of disease in one person; the lungs in a second; the liver and mesenteric vessels in a third; and so on, the disease being essentially the same, but modified according to the principal seat of the congestion.

In congestive fevers there is generally a peculiar expression of countenance,—it looks besotted; the manner of the patient is undecided, with an appearance of carelessness, and his words seem, as it were, to hang in his mouth; the cornea looks dim; the pupil, in the first stage, is rather dilated, and is not much affected by light. If the patient attempt to walk, he staggers like a drunken man. There is always more or less prostration of strength, and in severe cases, he is unable to stand upon his legs, or to move his hand to his head, even from the first. The respiration is short, quick, and weak. He often signifies that he has a great load in the præcordial region. As the disease advances, he becomes more and more comatose; picks the bed-clothes; and is always found lying upon his back, slipping down by imperceptible degrees to the foot of the bed; the surface becomes more cold; the breathing more difficult; the face assumes a leaden hue; and occasionally, though

rarely, convulsions take place ; sometimes there is nausea and vomiting, and sometimes diarrhœa ; most frequently, however, the patient is constipated.

It may be shortly mentioned, that the appearances on dissection are much the same as those described in intermittent fever.

With respect to the causes, they are the same as in other fevers ; but I have seen several very severe cases produced by bathing in the sea, and remaining too long in the water ; by taking a drink of cold water ; and by a weakly person exposing himself to a damp, cold wind, when his body had been previously heated.

Pathology of Congestive Fever.—No one can tell which is the first link in the chain of diseased action. The balance of the circulation may be destroyed, and congestion thereby produced, upon hearing disastrous news, which, some say, proves that a peculiar action in the brain is the first phenomenon ; but then, exactly the same circumstance may happen from taking a cold drink, or remaining too long in the water when bathing. Therefore, it must be confessed there is much ambiguity about this part of the pathology. But it is unnecessary to go over the same observations which were made when treating of intermittent and other fevers, further than to state shortly, that when the head is the chief seat of congestion, there are early symptoms of lethargy, coma, and a diminution of sensibility, frequent chills, followed by other well known nervous symptoms, and occasionally by convulsions. When the heart and lungs are loaded, there is an oppressed, irregular, or intermitting pulse ; weak and hurried respiration ; cough ; marks of impeded circulation in the face, and a difficulty in supporting the heat of the body ; and in some rare cases, violent pain in the region of the heart, and along the arms, is complained of. It may be remarked, that whenever the pulse feels weaker than natural in a severe disease, it is an excellent plan to place the ear to the region of the heart, for we shall often find it acting most powerfully when the pulse is weak in the extremities. When the congestion affects the viscera within the abdomen, there is generally a sense of fulness and distension about the stomach ; the bowels are irregular, being

either too loose or bound; and in either case, when stools are procured, they are found to be clay-coloured and very fetid, with very little bile, or very dark.

This opportunity may be seized for the purpose of noticing the most probable means which the animal system possesses, to prevent the balance of the circulation from being lost. *First*, There is a power possessed by all animals, of preserving to a certain extent a proper degree of heat under every condition of atmospheric vicissitude,—thus the heat of the body is not a degree higher under a burning tropical sun than in this country, which so far prevents cold from producing a lost balance of the circulation. *Second*, The elasticity of the coats of both arteries and veins, tends also to prevent the state of congestion, because they are capable of considerable distension, and are still contractile. These are assisted by the free anastomosis which subsists between the vessels of a part. This is well illustrated by the experiments which have been performed on the frog's foot, to determine the nature of inflammation. When a part is first irritated, the momentum of the blood is greatly increased; at last a vessel becomes obstructed, a globule of blood cannot pass through it, but it is seen to make a retrograde movement, and to find its way by another branch.

The pathology of this fever is happily illustrated by comparing the symptoms with the phenomena which occasionally take place in eruptive fevers, and to which I shall now make only a short allusion. In some cases, when the eruption is tardy in making its appearance, alarming symptoms, and even convulsions, take place. After the eruption has made its appearance, it sometimes suddenly and prematurely disappears, when congestive symptoms occur. Let the inquirer ask himself, where has the blood receded to, which a moment before rendered the skin as red as the shell of a boiled lobster?

Treatment of Congestive Fever.—In considering this part of the subject, it is very useful to remember the efforts which are made by the powers inherent in the constitution to remove internal accumulations of blood, if they be in any way short of that degree which kills the patient instantly. The first of these, and the most common, is the state which in medical

language is called re-action, which in its turn may create inflammation of the organ most affected with the congestion. We have next increased secretion, as a natural means of removing the congestion.

In the treatment of all diseases, the physician has to determine whether it will be most advisable to leave the case to the natural efforts of the constitution, assisting them a little in their operations, or whether he is by a bold decisive measure to step in to relieve the system at once. In this case, he is apprehensive that the heart and other vital organs may be too much overloaded and oppressed to create *full* re-action, or that the system will sink under the task. He has also to fear the effects of the re-action, which may terminate in extensive local inflammation. Anxious to escape these evils, he will follow the plan pursued by Sydenham in the case recently quoted, and he will open a vein with a view of at once restoring the lost balance of the circulation. The quantity of blood necessary for this purpose, in any given case, cannot be previously estimated. A stimulant may be at the same time necessary, to rouse the action of the heart a little, and make the blood flow from the orifice. I have frequently proved, before a number of witnesses, that it is not inconsistent with good pathology to bleed and stimulate at the same time.

When a vein is opened, the blood will perhaps only trickle down the arm at first; on other occasions it will spring from the orifice in a large stream, and suddenly stop before a table-spoonful is evacuated. Some think this is owing to an alteration in the position of the arm,—others, to the tightness or slackness of the bandage. Physicians frequently attribute this phenomenon to debility, and they take it as the most certain sign that the patient will die in their hands, were they to carry the operation farther. But it must be recollected that the blood is moving very slowly in the arteries, while the veins are gorged. When an opening is made in the vein, it suddenly empties itself, and as a supply is not quickly at hand, it is some time before the blood begins again to flow. Let the finger be placed on the orifice, the vein will be filled, and the blood will spring again. Heat is also to be applied, and if possible, the patient should be placed in a warm bath; if that

cannot be obtained, the feet and legs should be plunged into very warm water, and hot bottles placed round the body. The patient is to be rubbed with stimulating fluids, such as heated spirits of turpentine, and aqua ammoniæ; drachm doses of ether may be given, or a solution of the carbonate of ammonia, in the proportion of eight or ten grains to an ounce of water. He should be encouraged to drink warm fluids. The caution and discrimination which ought to be pursued in drawing blood in such critical circumstances, need not be insisted on; suffice it to say, that a stimulant ought to be at hand, and a finger should be on the pulse of the opposite arm, to watch the effects of our practice.

If every thing go on well after the bleeding, the bowels being in a proper state, two grains of calomel and one of opium may be given in a pill, and repeated every three or four hours.

General bleeding is admissible only in the earliest stage of congestive fever, unless in cases in which the pulse is still strong and full. Should the proper time for V. S. have passed, stimulants are sometimes found serviceable, but must be administered with caution, and relinquished for perhaps debilitating remedies, upon the first appearance of re-action. If, at any time in the subsequent progress of the case, there should appear signs of local disease, the application of leeches and blisters should be had recourse to; and the patient is to be treated during convalescence in the same manner as in any other fever.

MIXED FORM OF FEVER BETWEEN THE LAST-MENTIONED THREE, BUT IN WHICH CONGESTION PREDOMINATES.—THIS IS USUALLY DENOMINATED TYPHUS AND SYNOCHUS.

In the disease which is now to be sketched, there is a combination of the last three described fevers, appearing under three forms:

1*st*, Severe cases of congestive fever, in which there is slight or suppressed re-action, followed by inflammation.

2*d*, The functional fever, subsequently united with conges-

tion, and consequent accumulation of blood in different organs; this forms, I apprehend, the Typhus of authors.

3*d*, The inflammatory fever, subsequently united with congestion; this is the Synochus of authors.

As to the first variety, it has been fully explained in the last article, and the same remarks need not be here repeated.

The second variety begins in the manner which has been already described in fevers from functional derangement, but subsequently, an accumulation of blood takes place in the centre of the system. When the circulation becomes so much embarrassed, all the symptoms of congestive fever take place, the patient having been debilitated by the previous diseased action.

The third variety commences in the manner which has also been already described in inflammatory fevers, but subsequently the balance of the circulation becomes more and more lost, and congestion follows; in which state of the system, the inflammatory action is suppressed, but not extinguished. This takes place when debility and exhaustion have been already produced by the previous disease.

The brain, lungs, and organs in the abdomen, are liable to be implicated, and in the worst cases which occur, they generally are all affected, either simultaneously or in succession. Hence there is a complication of symptoms, and as the disease principally affects the poor, who are ill clothed and badly fed, and as medical advice is not in general sought during the first stage of the disease, we usually find it very difficult to manage.

In the early stage of the second variety, and when alone any thing like active practice should be had recourse to, the symptoms certainly denote debility, which are as yet occasioned by oppression and obstructed action only; and often have I seen cases immediately and permanently benefited by drawing blood, in which, had the operation been postponed for twenty-four hours, it would have been quite inadmissible. It may likewise be remarked, that much of the oppression and debility also depends on the condition of the lungs, which, besides being congested, and therefore unable to perform their functions properly, are subsequently still further embarrassed by

an inflammatory affection of the bronchial tubes. Both these conditions tend to prevent the changes in the blood, which are well known to be elaborated in the lungs; therefore, all organs must suffer additionally, and the brain of course among others. The bronchitic affection in fever has attracted my attention for many years, and I am led to believe, that few instances of febrile affections take place, without bronchitis appearing in some stage of the disease, and very often it is the primary affection. In all the fevers which are called putrid, and which are accompanied by dark-coloured spots on the surface of the body, termed petechiæ, it will be found, I am almost inclined to say invariably, that bronchitis prevails to a great extent. The somewhat livid and circumscribed redness which is seen so often on the cheeks in the fevers called typhoid, is principally owing to the embarrassed state of the lungs; and exactly the same circumstances take place in synochus.

In the third variety, bleeding may be had recourse to with benefit, later in the disease than in the others, and often have I seen it decidedly beneficial when cases were going wrong under the injudicious use of stimulants and tonics. In proof of these statements, the reader is referred with confidence to Dr Mason Good's account of typhus, in his second volume, (from page 230 to 258.) According to his views, this, being "a disease of sensorial debility, leading on to putrescency," is to be treated by tonics; "bleeding and purging are among the foremost objects of prohibition." Nevertheless, in the next page, the following contradictory statement is advanced; "hence the fever will be aggravated from local irritation, and the affected organ will be in danger of inflammation, if not of gangrene."

There is no class of diseases in which the stethescope is of more practical advantage than in fever, for, as has been already mentioned, the heart may be found beating violently, whilst the pulse at the wrist is so weak as scarcely to be felt, and when symptoms of general debility appear to be very great, and the extremities cold. To a patient in such a state, most medical men would naturally be led to give wine, beef tea, and animal jellies, which they would not do if they were aware that the action of the heart was strong. During the last twelve years, I have seen many severe cases of fever, in which

marked benefit was produced by withdrawing stimulants, and the patients have ultimately recovered after being leeched and blistered. Let it not, however, be supposed that I am an enemy to stimulants in all cases of fever; on the contrary, I have seen patients occasionally snatched from the grave by their judicious employment. What is wished to be impressed upon my readers, is, that in all fevers we have to dread local congestions and inflammations, more than debility and putridity. That I am in the habit of using stimulants in fever, I can appeal to the gentlemen who have been my pupils, and who have witnessed my practice, who can at the same time verify the following statement;—that much mischief has occasionally followed, and that therefore I feel fully as anxious about the result of a stimulant as a bleeding. When a stimulant is necessary, wine is the best; and experience has taught me, that wine, or any other stimulant, is far less likely to do harm than beef tea and animal jellies.

Cases can no doubt be quoted, where stimulants, in large quantities, have been administered from the beginning of the disease, and the patients have recovered. But the best way for any one to come to right conclusions regarding this question, is, to judge from the general result of what he has himself seen. I have had many opportunities of observing that recoveries were slower, and relapses more frequent, in cases treated upon the stimulating plan, than the antiphlogistic.

Emetics cannot be too highly extolled in the last stage of some cases of fever, particularly the varieties called typhus and synochus, but only in those in which the bronchial tubes become filled with muco-purulent matter. This happens in consequence of the patient being too long asleep, or not coughing up the matter before too great an accumulation has taken place. Many of my friends have seen the happy results of administering emetics in such cases, and more particularly, my dispensary pupils will not forget many instances of this among our poor patients during the late epidemic fever in Edinburgh.

Cleanliness, free ventilation, and quietness, are three great and essential circumstances to be attended to in the treatment of fever. The alvine evacuations should be removed instantly

out of the room; and it is of great consequence to attend that the quantity of bed-clothes be not too great in the first and second stages of fever when the skin is parched, or too small when the patient is approaching to the state of collapse. The extremities should be examined at every visit by the physician, as sometimes the symptoms are aggravated in consequence of cold limbs, which will perhaps require no other remedy than the application of heat. The state of the bladder should be attended to, for although the urine is generally suppressed, yet occasionally it is not so. The temperature of the room can scarcely be too cold in the first stages, but much injury has been produced by keeping it too low in the stage of collapse. Many patients have been strikingly benefited in less than half an hour after their bodies were made warm, and perhaps their lives ultimately saved, without the assistance of any other means. Some owe their death to being removed from a warm and ill-ventilated room into the cold ward of an hospital; so frequently has this happened, that I am obliged to run all hazards from bad air, bad nursing, and filth, rather than send my patients to the Infirmary of Edinburgh, which is ill constructed for any class of patients whatever. The sick are also badly classified, which is perhaps no fault on the part of the medical attendants, who ought to be well aware that the temperature of a ward calculated for fever cases in the first stage, is too cold for those in the last. Every fever ward of great extent should be warmed by means of heated air, and provided with water closets for the use of convalescents.

For a considerable time it baffled me to account for the discrepant histories of fever which have been handed down to us, and for the confidence with which opposite practices have been recommended to our notice; but further experience has convinced me, that this discordance of opinion may be accounted for by one or other of the following circumstances:

1*st*, A difference in the character of the prevailing epidemic, and the constitutions of the persons affected; for example, a functional fever will bear stimulating remedies which would kill a person labouring under an inflammatory fever, particularly if the inflammation affected a vital organ. A stimulant

given in congestive fever may operate beneficially; whereas in functional fever, or in inflammatory fever, it would be very injurious. A well fed, and previously healthy soldier, who has no cares, will in general have a high-toned fever; whereas a poor, ill fed, and badly clothed labouring man, worn out by cares and anxieties, and living in an ill-ventilated and filthy apartment, will be affected with one of an opposite character.

2*d*, An arbitrary and too often empirical practice, which has hitherto been too frequently followed. One physician always bleeds in every case of fever,—another stimulates; and when the results are analyzed, perhaps it will be found that the proportion of deaths is the same, and even these results will vary to support the one practice or the other, according to the habits and constitutions of the patients: For instance, if our army and navy surgeons were to stimulate throughout the course of the fevers they have to deal with, they would scarcely save a patient; and if practitioners entrusted with the care of the sick poor were to bleed all their cases of fever, they would be quite as unsuccessful.

3*d*, Writers are too often guilty of an error which all medical men are liable to commit, viz. of mixing up their own opinions with matters of fact in their statements.

4*th*, The prevailing habit of drawing sweeping conclusions from one or two facts.

5*th*, Unphilosophical attempts to bolster up erroneous views by special pleadings.

The proportion of deaths in fever, in my Dispensary practice, from the beginning to the termination of the last severe epidemic in Edinburgh, was as follows:—Out of the first hundred and forty cases, there was only one death. This patient was anxiously attended by a highly respectable practitioner in this place, who was then my assistant; he died during a relapse after he had sat up. The proportion of deaths, however, subsequently increased, so that in November (1827) the calculation of deaths was 1 in 37. This includes several individuals who were in the last stage before we were applied to; also the case of a girl who died during a relapse from accidental loss of blood after the application of

leeches; an old Highlander, who would take no other medicine than his own mountain dew; and an old woman, above 60, who, when convalescent, took a shivering fit, and died immediately.

The appearances found on dissection, in our fatal cases, were as follows:—In two cases there was well marked arachnitis, viz. by extensive effusion of coagulable lymph, which was deposited between the arachnoid and dura mater. In both there was great vascular turgescence; some effusion into the ventricles; and in one of these there was white ramollissement in the centre of the brain. In two men, and one old woman, the vessels of the brain were found very much gorged with blood, and the pia mater, throughout its whole extent, had its vessels amazingly distended with dark blood. The preparations were dried on glass, and can even now be seen in this state. In these three last-mentioned cases there was some effusion under the arachnoid, and the ventricles; and on slicing the brain, an unusual number of large bloody points were observed: there was also bronchitic effusion, and in one of them a considerable portion of the lungs was in a state of softening, and intensely red. In the old woman who died so suddenly during a rigor, when apparently convalescent, there was little disease in the mucous membrane of the stomach and bowels; but in one of the men, there was extensive vascularity of this membrane, but no ulceration; the mucous membrane of the stomach was much corrugated, and the whole of the splenic extremity was studded with red points, which were seen through a great quantity of thick viscid mucus, which being washed off, and the stomach stretched, these red points were discovered to be vessels, which existed in immense numbers; the vascularity was greater, however, in the mucous membrane of the bowels, particularly throughout the whole of the ileum, and a great part of the colon. In the other man, when the abdomen was opened, the small intestines had a black appearance, as if in a state of mortification; they were found filled with a bloody-looking exudation, which, from its weight, had borne them down into the cavity of the pelvis. It was thought at first that this matter was the sole cause of the discoloration; but upon cutting open the intestine, it was

found that they owed this colour principally to great vascularity; there were no ulcerations. There are dried preparations, and drawings of the appearances in this case, in my museum. In other cases, there were ulcerations in the ileum and colon, of which also the preparations and drawings are in the museum; and I am inclined to believe, that if these appearances were properly looked for, they would be more frequently seen. In one case, the left kidney was enlarged, as well as the ureter; its pelvis, on being cut open, was found to contain about six ounces of pus, and the inner membrane was very vascular. In the body of the old woman, who, it has been above stated, died suddenly during convalescence, the chief diseased appearance was, that both lungs were found as black as they usually are when affected with melanosis. I was not at the dissection, being engaged at the time in delivering a lecture; but Dr Crellin, who conducted the examination, sent for me, and it was proved to the satisfaction of all present, that this appearance was not melanotic, but produced by venous engorgement. I had never before seen the whole of both lungs so completely engorged; they sank in water, but after being washed, they regained not only their natural appearance, but their proper degree of buoyancy. The characters of the ulcerations shall be stated in the second part of the work, when treating of inflammation of the mucous membrane of the stomach and bowels.

HECTIC FEVER.

Hectic fever is generally supposed to be symptomatic; even Cullen embraced this opinion. It may be defined to be febrile symptoms occurring in the course of some internal chronic disease, when the patient is much debilitated. Heberden states that irritation in any diseased organ will give rise to it. An opinion has been pretty general, that hectic fever is produced by no other cause than the absorption of pus; and when pus was not found upon dissection, it was hastily

concluded that it had existed, but was all absorbed; or that hectic fever is sometimes idiopathic. My own belief is, that this combination of symptoms has no necessary connexion whatever with pus; and according to my experience, it most frequently (although certainly not always) depends on inflammation of the mucous membranes, and more particularly that of the stomach and bowels.

Symptoms.—Hectic fever is attended with great and increasing debility; a weak quick pulse; each paroxysm commences with chilliness, succeeded by re-action, which is soon followed by copious perspiration. Indeed, sweating is at all times easily excited by any exertion. The surface is pale, except the cheeks, which present what is very aptly styled the "hectic blush;" and there is frequently great wasting of the muscles. The appetite is impaired, the stomach occasionally very irritable, and in nine fatal cases out of ten, diarrhœa comes on during the course of the disease. The discharge from the bowels is always very fetid. The breathing is anxious. The patient is generally restless, and frequently complains of pains that are ascribed to rheumatism.

It is said that this disease is liable to be confounded with intermittent fever; but the history of the case, and the appearance of the patient, will readily distinguish them.

Treatment.—As hectic fever depends upon a morbid condition of some structure of the body, our attention must be directed to the seat of the disease. Surgeons very often cure patients of hectic fever, by cutting off a diseased limb which had produced the constitutional symptoms. There is no case in which the difference is so strikingly shewn between routine practice, and that which is directed by sound pathological views. The routine practitioner will be invariably found to treat some of the symptoms thus:—Has the patient no appetite? Give him a tonic.—Is he purged? Prescribe an astringent.—Is he griped? Give him an opiate.—Is the urine scanty? He must have a diuretic.—Has he profuse perspirations? Let acid drops be exhibited!

A pathologist, it must be admitted, is often obliged, in the present state of our knowledge, to act empirically; but his remedies will always be found to be few in number. If the

patient have diarrhœa, he will endeavour to ascertain upon what morbid state that symptom depends; if there be pain in the abdomen previous to an evacuation, if the pain be increased by taking a cold drink, if the tongue be red and glazed, if there be apthous ulcers in the mouth and throat, if the stools are mixed with mucus, or are watery and fetid, he knows he has to treat inflammation, and probably ulceration of the intestines. This leads him to apply a few leeches to the abdomen, if the patient's strength be not greatly reduced, followed by contra-irritation; and then, if there be any remedy that he knows will relieve the patient, that remedy he will prescribe. It is truly lamentable to see the symptomatical physician, one day treating the diarrhœa with astringents, and the next waging war against the perspirations.—This subject will be more fully illustrated hereafter. Opiates are frequently of considerable use in soothing the patient's sufferings.

GENERAL PATHOLOGY OF ERUPTIVE FEVERS.

The diseases which fall to be described under this head, are to be considered as fevers, attended during part of their course by eruptions. Whatever difference there may be in the appearance and form of the eruption, they have a certain general character common to all, viz. that febrile symptoms precede the eruption.

According to the humoural pathology, the fever is produced by a concoction of the humours, by which a peccant matter is thrown to the surface, forming the eruption. Other pathologists look upon these diseases as peculiar and essential affections of the epidermis, sometimes *followed* by inflammation of the chest and its accompanying fever; and they account for the sore throat which occasionally occurs, by its continuity between the skin and the diseased internal organ.

My own opinion is, that the eruption ought to be regarded as a mere symptom of this class of diseases. Yet it cannot

be denied that there is something very peculiar in it,—peculiar in as much as the eruptions present external characters, differing from each other, as well as from other eruptions, and that the diseases occur only once in a lifetime. After a long and patient investigation, comparing the symptoms with the appearances found on dissection, I have come to the opinion, that the mucous membranes are the seat of the disease, the nature of which is inflammation, more or less acute and extensive; and that the part generally most implicated, is the mucous membrane of the lungs, particularly in Measles and Small-pox; while that of the bowels is the part chiefly, if not principally, affected in Urticaria, Roseola, and Miliary Fever. The eruption is merely to be regarded as a symptom, and by no means a universal symptom. It is well known that many cases of Eruptive Fevers are very mild, and require little treatment, while others are extremely severe and fatal; and that a great deal depends upon the eruption, whether it comes out at the usual period, and whether it remains out, or prematurely and suddenly recedes. The eruption, in point of fact, ought to be regarded as a natural blister, acting as a contra-irritant. It is produced by powers inherent in the constitution, that enable it to remove so much of the diseased action from an internal organ, the functions of which are more immediately necessary to life. In slight cases, I conceive the eruption is in proportion to, if it do not exceed, the amount of the internal disease. This may be stated without reference to the quantity of the eruption, except perhaps in Small-pox. There can be no doubt that the eruptions are produced by inflammation of the cutis, which consequently must take off so much of the determination of blood, and so much of the diseased action from internal organs.

These circumstances, it appears to me, are clearly proved,

1. By attending to the constitutional commotion and oppression of the whole system, and the morbid changes in the functions of various organs, for many days before the appearance of the eruption.

2. By the relief afforded, in general, after the free developement of the eruption.

3. By the increased suffering and danger which exist when

the eruption is deficient, or when its repulsion suddenly and prematurely takes place.

4. By the relief which follows proper treatment; and,

5. By the appearances observed on dissection.

With respect to the first of these points, it may be stated, that the eruption does not appear in general till the third, fourth, or fifth day of the complaint, and during that time, the patient labours under the combination of symptoms denominated fever, and suffers from the impeded functions of all organs; all the symptoms denote internal disease. That the respiratory organs suffer very considerably, may be discovered by the state of the respiration, the cough, the anxiety and colour of the countenance; but more particularly by auscultation, which will announce bronchitis in its first stage. In this stage, which is called the eruptive, there are frequently affections of the brain, announced by the patient suffering from delirium, lethargy, or even coma; and it is by no means uncommon to see convulsions, or other serious nervous symptoms, come on, at the period when the eruption ought to have been fully developed, but has not yet appeared, or has only partially come out.

As to the second point which has been offered in proof, it is to be observed, that the symptomatical physician will not be inclined to receive it as evidence in favour of the views which I wish to establish. He will say there is no relief; and in so far he will say truly. The eruption being occasioned by extensive inflammation of the skin, produces great irritation, and very often an increase of the febrile symptoms; that is to say, the person will complain more of thirst, restlessness, and uneasiness, than previously. But still a pathological eye will discover relief,—relief produced by the translation of a part, and perhaps a great part, of the diseased action from internal organs to the surface. The symptomatical physician will point out to us that the respiration is still hurried and short, but we may be able, after an examination of the lungs, to assure him that there is less congestion of the lungs, and less inflammatory action in their mucous membrane, than before; and that the state of the respiration which he has noticed, is now produced principally by the hurried circulation through

the lungs; so that, pathologically speaking, the patient is relieved. A common blister, when it is sufficiently large, very frequently increases the patient's sufferings, while it has mitigated the disease.

The third point of proof is the acknowledged danger which exists when the eruption is deficient, or when its repulsion has taken place. Dr Gregory, in his lectures, when treating of Scarlatina, used to make the following statement: "We find a connexion similar to that between the efflorescence and other symptoms in this disease, existing between the eruption and general affection in Measles, for there it is not critical, but is accompanied with an alleviation of the symptoms, which is greater or less according to the degree of the eruption; and all the symptoms are very much aggravated by the repulsion of it." Indeed, if the reader will refer to any author who has written upon this subject, he will find, that in the severe forms of the disease, which are commonly described under the terms *Scarlatina Maligna*, *Scarlatina Anginosa*, and in *Rubeola Putrida* also, the eruption is either wanting, or it appears at irregular periods, but is seldom permanent; and it is in these severe cases that we meet with what are called typhoid symptoms, diarrhœa, and hæmorrhage from the nose, mouth, or bowels. The first question which it is natural for an inquirer to ask, is, By what cause is the danger produced? It appears to me, that the reply is very easily made. There has been lately an extensive inflammatory action in the skin, which required a determination of blood to support it. During this time the symptoms were not very severe; but the moment that the blood forsook the surface, it was marked by increased internal distress; the respiration became more laborious, and the patient more or less comatose; perhaps convulsions appeared. Is it not quite natural, therefore, to conclude, that these effects are produced by the sudden determination of blood taking place towards internal parts, producing engorgements, and ending in inflammation of one or more organs, if the eruption be not speedily brought back? But it will frequently be that kind of inflammation which has been described as "suppressed," and which cannot fully develope itself. The external symptoms will lead a symptoma-

tical physician to stimulate and give tonics, when the pathologist would try the effect of the warm bath, stimulating frictions, and bleeding by leeches, if he could not open a vein; and he would also apply blisters.

The fourth point in the evidence, is the relief afforded by proper treatment. When the eruption is repelled from the surface, we use all the means within our power to recall it; the warm bath and stimulating frictions are first employed. The warm bath, which is the principal means to be depended on, may not be at hand, or we may have tried these remedies and failed; but we ought not to delay long under any circumstances, to open a vein, if the eruption be not speedily reproduced, particularly if the patient be above two years of age, and a vein can be found; if not, we must depend upon leeches, warm bath, and blisters. By opening a vein, however, we prevent a great deal of mischief and risk to the patient. If we cannot recall the blood to the surface, we reduce the quantity of it in the whole system, and thereby remove the accumulation from internal organs, alter the determination of blood, and then assist the system in creating re-action, if necessary, by the addition of a stimulant. But all this, to produce benefit, must be done instantly; every moment lost, diminishes the chance of relief. I am entitled to speak strongly, from the great success which has attended the treatment here recommended, not only in my own practice, but also in that of many of my pupils. Although many of these cases might be quoted in detail, yet the perusal of the following case, translated from the Clinique Médicale, by M. Andral, vol. iii. p. 72. will perhaps make a sufficient impression upon the minds of my readers. This case is entitled, "*Acute bronchitis; Measles; Premature disappearance of the eruption; Fatal dyspnœa.*"

"A baker, æt. 20, of a strong constitution, was affected within the last five or six weeks with slight diarrhœa; presented on the 10th April all the precursory symptoms of measles, redness of eyes, flow of tears, coryza, hoarseness, cough; and continued in this state for the three following days. On the 14th, the eruption appeared, and the patient took to his bed. On the 15th, his whole body was covered, and in

the evening he was admitted into the Charité; when he had a confluent, well-marked eruption; hardness and quickness of the pulse; redness of the tongue and lips; and a strong cough; there was otherwise no alarming symptom. Towards the middle of the night, the patient experienced, all of a sudden, an oppression, which rapidly increased, and on the following morning we found him in a state of partial asphyxia; the eyes prominent; the face of a violet colour; respiration short and very frequent; cough nearly constant; little mucous expectoration. Percussion elicited the natural sound through the whole of the chest, but the mucous rattle was audible, in different points, by means of the stethescope. There remained only a few pale spots of the cutaneous eruption, which were fast dying away. The pulse preserved its frequency and *hardness*, and the tongue its redness. This train of symptoms seemed to indicate the existence of pneumonia; nevertheless the pathognomic signs of this complaint were completely wanting.

"Could a simple bronchitis occasion, by its extreme acuteness or sudden exasperation, so much dyspnœa? and might not this inflammation, joined to that of the alimentary canal, account for the complaint with which the patient had been so violently attacked? Be this as it may, the indications of treatment were clear;—to lessen the internal inflammation,* and *to effect a return of that on the skin.* With this object, twenty leeches were applied to each side of the chest, and ten to the epigastrium. After the blood had ceased flowing, a blister was applied to each leg, and the skin rubbed all over with liniment of ammonia. Marked relief followed the use of these means; in the evening the respiration was much less impeded, the cough less frequent, and the tongue had lost its redness. The eruption, however, had not returned.

"17*th*, The patient presented the symptoms of a severe

* Had the distinguished author used the term "congestion" instead of inflammation, and had he employed V. S. without delay, instead of applying leeches, he would have altered the determination of blood, and probably relieved the diseased organs. This ought to have been his practice, from the hardness of the pulse.

bronchitis, accompanied with fever; the respiration was only slightly accelerated.

"18*th*, The fever was reduced to almost nothing, and the opaque expectoration announced the speedy termination of the bronchitis. In the evening, the respiration suddenly became very difficult, and twelve ounces of blood* were abstracted from the arm. The next morning the dyspnœa was still very considerable, and the pulse had become more quick. Two blisters to the thighs. During the whole of the day, the sense of suffocation continued to increase.

"20*th*, Face extremely livid, violet colour of the lips, orthopnœa; from the appearance of the patient, one would have thought that he was dying of aneurism of the heart.

"*Inspectio cadaveris.*—The mucous membrane of the larynx, trachea, and bronchial tubes, and of the smaller ramifications, were of a scarlet red. In a few points at the beginning of the division of the bronchia, there were some white concretions, resembling the false membrane found in croup.

"The lungs were sound and crepitated throughout their whole extent, posteriorly they were gorged with blood. Heart natural; clots of blood of a deep black in the right cavities; stomach white, as well as the small intestines, which contained a great number of ascarides and lumbrici in the lower portion; the cæcum contained several worms, (tricocéphales); its mucous membrane presented a red spot near the valve, from which arose three or four small conical vegetations, three or four lines long. The rest of the large intestine white, and filled with liquid feces. Liver gorged with blood. Spleen large and firm. A great quantity of serum infiltrated into the sub-arachnoid cellular tissue; the cerebral substance was not at all injected; the lateral ventricles, especially the right, were distended by much limpid serum."

The fifth point of evidence rests upon the appearances found on dissection; and it may be shortly mentioned here, that these consist of all kinds of lesions of the brain and membranes, usually produced by acute and sub-acute inflammation. The same observation may be made respecting the organs in

* It is to be regretted that this was not done two days earlier.

the thorax. Within the abdomen, the chief diseased appearance to be observed is in the mucous membrane, particularly of the large intestine, which is inflamed, sometimes ulcerated. But in no case does the pulmonary system escape. The appearance in the brain and abdomen are not so universal, and may occasionally depend upon the impeded functions of the lungs, as will be shewn hereafter.

If these observations be not fallacious, bleeding to a sufficient extent ought not only to relieve the constitutional symptoms during the eruptive fever, but after the eruption has appeared, ought to destroy it. Observations and experiments frequently performed and repeated by myself, and by my pupils, enable me to state, that these are facts, which I shall not be afraid to repeat before the highest authorities in the profession, and stake my professional reputation upon the general result of the plan; having already seen recoveries take place, under this treatment, in cases in which such a happy termination was scarcely to be anticipated. It also follows, if these things be true, that even in ordinary cases there are two periods more critical and dangerous to the patient than any other; these are, the period at which the eruption ought to make its appearance, and that at which it should naturally disappear. In the first case, the internal disease has gradually become extensive and severe, and wants relief by means of the eruption. In the second, the disease which had existed at first, having been relieved by the external irritation, is now in danger of being re-produced by its cessation; and this of all others is the period at which, in the slightest form of the disease, the patient stands most in need of care and vigilant attention to the condition of internal organs.

This pathological description, if it should appear deficient, is so only, I am convinced, from the want of sufficient illustration, which would require a separate treatise on the subject. It is introduced in this place to prevent repetition, when treating of each of the diseases which fall now to be described.

SCARLET FEVER.

This term is employed to denote a disease attended by a fever, sore throat, and a red rash on the surface, which rash appears sometime between the second and fifth or sixth days of the disease, first upon the face and neck, and progressively spreads over the body, terminating between the seventh and tenth days. The rash has very much the appearance of the shell of a boiled lobster, and frequently there are minute vesicles. The inflammation of the throat sometimes runs into ulceration and sloughing.

The literary history of this, or of any other disease, is of little importance in comparison to an intimate acquaintance with its pathology, and proper means of treatment. Therefore I shall proceed to describe the phenomena, without caring from whence the disease came, or in what century it first appeared, further than to notice that Scarlatina and Measles were formerly confounded, from their mutual pathological resemblance. Sydenham appears to have been the first who gave this disease the name of scarlet fever, as well as a distinct description of the affection, pointing out the circumstances, with sufficient precision, in which it differs from Measles.

The term Scarlatina, notwithstanding the philippic of Dr Mason Good, is quite as good as his term "Rosalia;" it affords us an example of what is by no means rare, a disease receiving its name from a single symptom.

Scarlatina has been divided into three species, viz.

Scarlatina simplex.

——— anginosa.

——— maligna, which last includes the disease termed Cynanche Maligna. My chief objection to these terms is, that they do not spring from pathological considerations; and it may be said in the language of Dr Hamilton Sen. (not the Professor,) that "it is altogether foreign to my purpose to engage in this controversy; and more so, as the distinction begins to lose ground as our knowledge of the disease becomes more comprehensive and accurate. The time may not be far

distant, when scarlatina will be received as the generic disease, the full history of which will include the more aggravated symptoms as they appear in scarlatina anginosa, and in cynanche maligna; in the same manner as the history of variola comprehends the varieties of the distinct and confluent small-pox."

Scarlet fever is a fatal disease, and more particularly so, it is said, in this city. The plague is scarcely more dreaded at Constantinople than scarlet fever is in Edinburgh; not because the disease is peculiarly severe, but that the notions taught in a dark age still prevail, and that certain individuals have not kept up their knowledge with the improvements since made in pathology.

Symptoms.—In eruptive, as well as other fevers, there are two great varieties, which may be named the congestive and the inflammatory; and sub-divisions might be made of different combinations of these two.

In the congestive form of scarlatina, the patient complains of oppression, and so much debility, that he cannot support himself. Rigors more or less severe accompany, or precede, these symptoms. The face is pale, the features sharp, the eyes hollow, and deprived of their accustomed animation; the surface cool, particularly the extremities, while perhaps considerable heat is felt on the trunk of the body; the breathing is performed with more or less difficulty; the pulse varies, being sometimes soft, and perhaps weak, although it is occasionally strong; the tongue has a whitish and shrunk appearance. If the patient utter complaint, it will be of universal prostration and of headache, or weight on the top of the head, together with oppression at the præcordia, and difficulty in swallowing. On examining the fauces, the parts may appear somewhat swollen, and of a dark colour; and should there be any ulceration, it will perhaps be ash-coloured, and look indolent. It may be stated, and with some plausibility, by that class of practitioners who are led only by symptoms, that those just described do not denote the existence of scarlatina; to which it may be replied, that one individual of a family will display such symptoms, while others are labouring under the disease in the ordinary form. Similar appearances have also come on in the course of scar-

latina, upon the sudden disappearance of the rash; and further, the cessation of the congestive symptoms has been witnessed upon the re-production of the rash; which phenomena have occurred so often, that I am compelled to receive them as part of the medical evidence. I have had one opportunity only of examining the body after death, in a subject who fell a victim to this form of the complaint. The throat was found to be very slightly ulcerated. There was considerable distension of the veins in the abdomen, the lungs were much congested, and the vessels of the head were remarkably full of dark-coloured blood.

The pure congestive disease is rare, but it is very common to see the mixed disease, that is, a combination of the inflammatory with the congestive symptoms.

The inflammatory form of scarlet fever generally makes its attack in the following manner:—rigors, or only slight chilliness, followed by more or less pyrexia, restlessness, want of appetite, thirst, want of sleep, headache, some degree of nausea, oppression at the præcordia; tongue at first slightly loaded, red, with raised papillæ; or it may be much loaded with a yellow fur, and intensely red at the tip and round the edges. Soreness of the throat is complained of, which is sometimes the first cognizable symptom; it is either slightly swollen and much inflamed, or of a dusky hue, without much swelling; ash-coloured ulcerations may often be discovered, but we must be upon our guard not to mistake exudations of coagulable lymph for ulcerations. In the generality of cases, there are evidences of sub-acute inflammation in the larynx and bronchi, which is announced by difficulty of breathing, cough, and hoarseness, and more particularly by auscultation; but the inflammation in the bronchial tubes is not so decidedly marked in all cases of Scarlatina, as in Measles and Small-pox. Sometimes there is delirium, but perhaps during the course of the night only, and sometimes some degree of coma. These symptoms may continue for 2, 3, 4, 5, or 6 days, before the rash makes its appearance. Sometimes, indeed, the eruption is the first symptom which announces the complaint, but this happens in the mildest cases only. In general, the eruption appears on the 4th or 5th day.

The eruption is of a scarlet colour, first to be observed on the face and neck, and in the course of twenty-four hours becomes pretty generally diffused, patches appearing here and there more intensely red than the surrounding parts; on pressing with the finger a white mark is left, but the redness returns in a moment afterwards.

After the eruption has existed from 3 to 5 days, it begins to decline, the cuticle subsequently separates and peels off. This is a very dangerous stage of the disease, and would be still more so, were it not that the eruption declines gradually, and that the circulation on the surface is still actively employed in the formation of new cuticle for the whole surface.

Dr Gregory, in his lectures, used to state, that "a copious efflorescence is a favourable symptom; when it is deficient the symptoms are more severe, and when it is repelled, it never fails to aggravate both the general fever, and the topical affection of the throat." "It is not an easy matter," continued he, "to explain the connexion which subsists between the efflorescence and the other symptoms; it is not critical, but all the symptoms are much relieved by its coming out copiously."

Occasionally anasarca, and more rarely ascites, follow in the first or second week, and are attended with constipation, scanty urine highly albuminous, languor, nausea, general uneasiness, and other symptoms which have been denominated Secondary Fever.

Appearances on Dissection.—In the dissections which have fallen within my observation, the inflammation and ulceration in the throat have not appeared so extensive and important as had been imagined before death. The most constant diseased appearances have existed in the air passages, presenting inflammation in its different stages; viz. vascularity of the mucous membrane, thickening, and occasionally ulceration; in two cases I have seen the epiglottis nearly destroyed by ulceration; and also effusion of thick, tenacious matter, filling up the air passages to the bifurcation, and often lining the trachea. Sometimes the substance of the lungs is seen inflamed, and occasionally the pleura, but traces of inflammation in these two tissues are not so frequently met with, and are to be regarded more as examples of acute action, extending from one tissue to

another by contiguity, than as forming essential parts of the disease. The lungs are sometimes so much gorged with blood, as to have lost in a great degree their natural appearance and buoyancy. In the brain there is sometimes arborescent vascularity, with turbid effusion between the arachnoid and pia mater, and the ventricles are occasionally filled with serosity. On opening the abdomen, the peritoneal coat of the stomach and bowels generally looks healthy, except in the congestive cases, when the smallest blood-vessels will be seen distended with dark-coloured blood. In different parts of the mucous membrane, we frequently see considerable vascularity, sometimes ulceration. The liver is often gorged, or soft in texture.

"From a cautious survey of the symptoms during life," says Dr Armstrong, in his work on Scarlatina, &c. page 16. "and from the examination of several bodies after death, I am warranted in affirming, that the brain, the liver, the stomach, the intestines, and the lungs, are the parts most often inflamed, and that the inflammation in these parts is generally the cause of death, together with the affection of the throat."

Treatment.—In scarlatina, as in other diseases, differences in pathological opinions have of course given rise to dissimilar methods of treatment. Some, considering it a disease of debility, recommended bark, and wine, or brandy, with nourishment, and condemn antiphlogistic means as highly dangerous; in this class of symptomatical writers stand Underwood and Dr James Hamilton Jun. It will not surprise my readers, that the first named individual, who did not live long enough to profit by modern pathology, should have taught the doctrines that prevailed in his own time; but considering the account which every author gives of the symptoms and course of this disease, and the appearances on dissection, it is lamentable to reflect that there is one author of the present day, who speaks doubtfully even of local bleeding in scarlatina, and who recommends cordials and nourishment, and even wine itself, in large quantity. But all this does Dr James Hamilton Jun.*; he goes even the length of quoting a great medical authority, *the head master of a boys' school in Yorkshire*, in whose prac-

* Vide his work on the Diseases of Children, p. 380.

tice, among the said boys, "*it was found that children under fifteen years of age, affected with this disease, required within the twenty-four hours, sometimes not only a bottle of port wine, and another of raisin, but also a proportion of brandy.*"*— Poor boys!

Underwood, in describing the treatment necessary in this disease, makes the following extraordinary statement: "*Should the affection of the throat, therefore, be evidently inflammatory, or should a case occur where the fever may seem to be of that kind, (which may be better ascertained by the hardness of the pulse than any other symptom,) it will very rarely bear bleeding, even in the beginning of the disease; as symptoms of debility generally attend in some period of the scarlet fever, and will allow only of that middle course of treatment hinted at above. In a general way a cordial plan is required throughout the disease.*" † And yet, on turning the next page, it will be found he recommends bleeding in the secondary fever; and he also tells us, that a critical bleeding from the nose has saved life, when the patient's state "has appeared very hazardous, and the prostration of strength been considerable."

In the slighter forms of scarlatina, very little treatment is necessary, further than confinement, attention to the bowels to keep them free, and the antiphlogistic regimen. In such cases, however, the medical attendant should be careful to watch diseased action, at the period when the eruption naturally declines, for reasons already mentioned. Formerly I saw many fatal cases of scarlatina, when I practised according to the opinion of the schools, carefully abstaining from bloodletting, and using all the means recommended to support the strength; but I occasionally observed patients snatched from the grave by considerable bleedings from the nose, and at times when it was thought the loss of an ounce of blood would prove destructive. These circumstances, together with the appearances found on dissection, led me to bleed in many subsequent cases, and I have never had occasion to regret it. Blood has been drawn at all periods of the disease, in cases

* Management of Children, p. 381. Ed. 1824.

† A Treatise on the Diseases of Children, p. 289.

where the state of the lungs and brain required it; and should the operation be performed during the period of the eruption, it will disappear, if a sufficient quantity of blood be taken. When the inflammation of the throat runs very high, I know no remedy productive of such certain and immediate good effects as general bleeding, but should the patient's strength be already reduced, leeches are to be preferred.

Dr T. P. Lucas of the Royal Artillery, and Dr Wilson, cannot have forgotten the case of Ann M'Farlane, aged 18, which they treated, when they were my pupils in the year 1824; from whom they took above ℥ xx of blood, with instant good effect, on the fourth day of the disease, when she had a large sloughing ulcer occupying the whole of the right tonsil. She afterwards required no other remedies but laxatives, and in a fortnight returned to her usual occupation.

A great many other gentlemen, who have been pupils at my dispensary, can be appealed to, and I may refer in an especial manner to the testimony of my talented colleague Dr Robertson, who was opposed to the practice of general bleeding in scarlatina, till he saw the success of it. When general bleeding is either inadmissible, or not thought necessary, or when the child is under two or three years of age, local bleeding by leeches will be found highly serviceable. When the throat is extensively inflamed, although the accompanying symptoms may be mild, I always think it right to reduce the inflammation by the application of leeches, followed or not by a blister, according to circumstances. Laxative medicines, frequently repeated, are very necessary. Spunging the body either with tepid or cold water, produces good effects, by allaying restlessness. Cold affusion may do no harm in the slighter forms of scarlet fever, but in the severe cases which invariably display marks of internal disease, and in which congestion has taken place, its use cannot be defended.

The tartrate of antimony has been long employed in this country in the treatment of fevers and inflammations, and it has been found very serviceable in this disease, by controlling the action of the heart, and relieving uneasiness. It may be used in the diseases of children, by dissolving one or two grains in two ounces of water, a tea spoonful for a dose as often as may be thought necessary.

Gargles may certainly be employed, and those of a stimulating nature are much lauded; but it appears to me that the best gargle is a little warm water; and I particularly caution young practitioners against attempting to syringe the throat of a young child. Inhalation of the vapour of warm water will be found to ease the throat more than any gargle. Opiates are often serviceable in the last stage, and during convalescence, to allay irritability, and procure sleep.

Since the alteration which I have adopted in practice, I rarely see secondary fever or dropsy; but too great care cannot be taken during recovery, and the patient should be cautioned against the risk that he will run from exposure, errors of diet, and neglecting the state of the bowels. Should dropsy take place, it will in general be found to be of the acute kind, with coagulable urine, with a specific gravity of about 1010°, and will sometimes require the lancet, although brisk purgatives, with diuretics, will in general suffice.

Dr Lewins was called to see a little patient of mine, who, after scarlatina, had dropsy with coagulable urine. Convulsions suddenly appeared when he was much debilitated; Dr Lewins opened a vein, and allowed the blood to flow till the boy (whose age was ten years) was relieved; the blood weighed two pounds. No debility followed, and the boy from that time made a rapid recovery, and has ever since been healthy.

In conclusion, it may be mentioned, that various affections occasionally follow scarlatina, as inflammation, and swelling of the glands, and perhaps more particularly of the parotid, which must be treated upon ordinary principles. Inflammation often attacks the internal ear, leaving a fetid discharge, followed on some occasions by incurable deafness, which must also be treated by appropriate means. These and other appearances following scarlatina, are commonly known by the term "dregs" of the disease.

MEASLES.

Measles may also be defined to be a disease attended by fever and an eruption, which appears at various periods, but

generally at the termination of the fourth, or beginning of the fifth day, and continues for three, four, or five days; after which, some discoloration is left on the surface of the body, and occasionally the cuticle separates, but not so invariably as in scarlatina.

Measles has been divided into four varieties:

1*st*, Rubeola vulgaris.
2*d*, ——— sine catarrho.
3*d*, ——— nigra.
4*th*, ——— putrida.

Pursuing the same pathological plan which has been adopted when treating of scarlatina, I shall also mention two great varieties of measles, the congestive and the inflammatory.

In the first species, which has been so well illustrated by Dr Armstrong, re-action does not take place; or if it do, it is slight, the eruption is trivial; the pulse is feeble and oppressed, perhaps quick; and the surface is free from that redness and heat which gives such a striking external character to the pure inflammatory disease. This is, no doubt, one form of the complaint called "*putrid*," and which has been described by Morton, Huxham, and Watson. The same pathology that was maintained in scarlatina, and also in the general statement concerning eruptive fevers, equally applies to this case, and renders it unnecessary to repeat the observations.

Capuron, in his treatise on the diseases of children, at page 293, makes the following statement:—"One of the most dreadful complications of measles, is that with an ataxic or malignant fever. Individuals naturally lively and delicate, as those in infancy, are more subject to it. It is one of those unlooked-for anomalies in the vital properties. The functions of the brain are disturbed; respiration is deranged, and becomes extremely constrained; in a word, the patient is *quickly* reduced to the last extremity, if something be not done for his relief. The most active treatment is here indispensably necessary to sustain life, which is shaken to its very foundation." Subsequently he states, that "infants naturally weak, or who live under the influence of debilitating causes, are exposed to an adynamic or putrid fever during the course of the measles. One detects this dangerous complication by the change in the

form and colour of the spots;—from being at first prominent, and of a lively red, they become more depressed, pale, and livid; in which case, we must prevent the prostration of strength in good time, *and direct the eruption back again towards the surface of the body* by the use of tonics, such as wine, bark, and camphor; the greatest advantage may be also obtained by epispastics, and above all by blisters." At page 294, he again observes, "there are infants in whom the progress of the eruption is arrested, the spots disappear, and pains in the chest, more or less severe, manifest themselves; respiration is oppressed; peripneumony declares itself; suffocation is threatened."

Mr Burns of Glasgow, in detailing the symptoms of measles, states, that "sometimes the eruption suddenly and prematurely recedes, or never comes fully out. Both of these cases are unfavourable, the fever is high, and the oppression great." It will be seen, by consulting the report of diseases treated at the New Town Dispensary of Edinburgh, during the last six months of the year 1816, published in the 13th vol. of the Edinburgh Medical and Surgical Journal, that this form of the disease was very prevalent, and that few children recovered; most of those attacked were of feeble habit, or weakened by previous illness, "but others appeared to have been quite healthy when exposed to the contagion." Those affected in this way were chiefly infants, but a few were children from four to seven years of age. They were ill longer than usual, generally five or six days, before any eruption appeared, having the usual catarrhal symptoms, with much debility and drowsiness; frequent vomiting; generally frequent, and sometimes bloody stools; quick pulse, and white tongue, *without much heat of skin.* When the rash appeared, it was at first less distinctly circumscribed, and afterwards less elevated than usual, of a darker colour, and attended with less heat of skin. After its recession, the patients were more or less distressed with cough and dyspnœa, generally with diarrhœa, and almost always with a frequent ineffectual attempt to vomit. The pulse and breathing became very quick; the tongue, after losing the white crust which had covered it at the beginning of the disease, became dry and hard; the posture indicated

much debility; the countenance had the languid, vacant expression of typhus; and a dark-coloured fur usually gathered on the lips and teeth. In all these cases, there was a degree of drowsiness approaching to coma; and in a few, this state appeared to be blended with delirium.

In two or three instances, infants exposed to the contagion of measles, became affected with catarrhal symptoms, fever, drowsiness, quick and oppressed breathing, and died, without any eruption being observed.

In the cases of speedy recession of the rash, if the cough and dyspnœa were urgent after its disappearance, *death almost universally ensued*, from the first to the fourteenth day after that change. But those in whom the pectoral symptoms were less distressing, recovered from the state above described, under the use of wine and cordials, which, as far as we could judge, were as decidedly beneficial in these as in any other cases in which we have seen them used. It should be mentioned, however, that one or two, who could not be prevailed on to take either food or medicines, gradually mended without any crisis being observed.

On opening the bodies of those who had died of this form of measles, a considerable accumulation of mucus in the bronchia was always found. In two infants, under a twelvemonth, there were marks of inflammation of the lungs, (which in one of these had proceeded to ulceration,) and a good deal of water was found in the pericardium. In one child, four years of age, there was such a congestion of blood in the lungs, that a large portion of them sunk in water.

In several cases, in which the eruption had almost or entirely disappeared on the second day, it re-appeared that night, after the use of the warm bath, and an opiate, and continued nearly the usual time.

An aphthous state of the mouth and tongue occurred pretty frequently, but was not confined to the unfavourable cases.

The circumstances of the livid colour, and rapid recession of the eruption, of the succeeding typhoid state, and the irritability of stomach attending that state, seem to point out a resemblance between the cases of measles now described, and the worst cases of scarlatina.

I scarcely think that such symptoms and morbid appearances support the wine and cordial treatment, which, we are told, was had recourse to in these cases. It has fallen to my lot to treat a considerable number of cases of this kind ; and the plan which experience has led me to adopt, is, first to try the warm bath with stimulating frictions ; but if the symptoms be very threatening, such as coma, convulsions, or asphyxia, or an approach to these states, the best practice, if the patient be an adult, or even a child, if a vein can be found, is to bleed at once. Many interesting cases might be detailed, shewing the advantage of this plan. The following is a short sketch of one. A few years ago, I was called suddenly to see a child in measles on the first day of the eruption ; every appearance had been so favourable up to the moment of the sudden recession of the rash, that the family had not applied for medical advice. On my arrival, the eruption, which had been extensive, and of the usual colour, was not to be seen, although it still was to be felt. The child was under three years of age, and of good constitution ; it had had three or four strong convulsions in the course of rather less than an hour, and was now comatose; one pupil dilated, while the other was of the natural size ; the hands were clenched. A good sized vein being found in the arm, was instantly opened, and from eight to ten ounces of blood abstracted, when the breathing, and every other appearance, became more favourable ; the pulse, which was under sixty, rose gradually as the bleeding went on, and the child soon became quite sensible. So far from debility following, it was necessary, from the appearance of cerebral irritation, to apply leeches next day to the head ; the child made a rapid recovery, and was running about in the course of a week.

In every respect, the treatment must be conducted in the manner detailed in congestive fever, as well as in the congestive form of scarlatina.

The inflammatory disease is the form most generally met with ; we have the usual eruptive fever, preceded by rigors, depression, and debility ; along with the fever, the patient has a dry cough, with hoarseness ; frequent fits of sneezing and coryza. He also complains of giddiness and pain in his forehead, as well as in the back ; his pulse is various, some-

times frequent and small, or frequent and strong; often it is irregular and oppressed; the bowels are generally confined, and the evacuations fetid. In the course of the second, third, or fourth day of the fever, the symptoms run higher; the eyes are tender, red, watery, and inflamed; the dyspnœa, which was slight at first, is now more severe; the patient complains of tightness of the chest, pain, and oppression at the præcordia. The eruption appears first on the face and neck, in twenty-four hours it is found on the breast, and afterwards gradually spreads over the rest of the body; it consists of small red papulæ, slightly elevated, resembling recent flea-bites; these soon form themselves into extensive patches, irregular in shape, their margins having somewhat of a crescentic appearance. The eruption is sometimes very extensive, at others slight. The throat, when examined, will be observed to be covered with small red patches, occasioning difficult deglutition.

Sometimes immediately before the eruption comes out, the patient is seized with violent sickness and vomiting; sometimes with convulsions; but if the eruption subsequently comes out freely, these symptoms abate.

In a great majority of cases, the disease is rather slight, and the internal disturbance, which is discovered by the symptoms already described, is generally very much appeased soon after the appearance of the eruption, particularly if it come out freely and plentifully. Occasionally, however, the symptoms are very severe from the beginning; the cough is frequent and harsh; there is considerable dyspnœa, with hot skin, thirst, and a quick pulse; and the child is occasionally so lethargic, that this symptom early attracts our attention.

As the embarrassment of the lungs increases, which may happen in any stage, the face becomes discoloured, and sometimes presents a purple appearance, and occasionally the eruption over the whole body assumes a dark colour; this is the state which is called *rubeola nigra*, and is probably that form of the complaint described by Dr Watson and others, under the term Putrid Measles.

After the natural disappearance of the eruption, the fever, dyspnœa, and cough, in some cases increase, attended or not with considerable gastro-intestinal irritation and diarrhœa:

occasionally inflammation of the eyes, and enlargement of the glands of the neck, succeed. Blistered surfaces frequently slough; and it has been remarked by Dr Watson, Dr Ferriar of Manchester, and others, that an ulceration of a particular character attacks the pudendum of girls, from which few recover; four cases have fallen within my observation, three of which proved fatal; and it is my opinion that death is not owing to this ulceration, but to internal disease. Dissection, in two of these cases, displayed extensive disease of the lungs, but more particularly ulceration of the mucous membrane of the intestines, of which the preparations and drawings are in my museum.*

Appearances on Dissection.—Morgagni notices the following case, which he says has been transferred from Ballonius into the Sepulchretum: "On examining the body of a person to whom it was suspected that poison had been given, the stomach was found beset with exanthemata, and the physicians were upon the point of asserting that the appearance was owing to poison, when they were informed that the person died of measles, which began to appear on the skin, and suddenly vanished."

In the examinations at which I have been present, effusions and other marks of inflammatory action have been found in the brain, and sometimes ulceration in the mucous membrane of the bowels; but I have seen no dissection in which the pulmonary system escaped. The lining membrane of the bronchia, trachea, and larynx, has not only been found in a highly vascular state, but it has been thickened, softened, and occasionally ulcerated; the ulcers are small, and generally situated near the bifurcation; the bronchial tubes are more or less filled with a matter like pus or thick mucus, as in bronchitis; the colour of this secretion varies; and it is sometimes tenacious. This condition of the air passages has always

* This is the disease which has been described in the 7th vol. of the Med. Chir. Trans. of London, by Dr Kinder Wood, who saw twelve cases, of which only two recovered. The case of recovery which I have noticed, was under the care of Dr Moffit of the 7th Hussars; the patient was a soldier's child. The disease followed a very slight attack of measles.

existed on both sides of the chest. In many cases, the lungs are found emphysematous, in others inflamed in different degrees; the inflammation rarely affecting both lungs, and it is frequently confined to one lobe. Occasionally there are extensive inflammations of the pleura, indicated by effusion of serum and exudation of coagulating lymph, besides thickening of the pleura and recent adhesions. In cases of longer standing, tubercular formations are observed in different degrees of advancement; sometimes even excavations of the lungs are seen.

It ought to be noticed, that the inflammatory appearances in the brain and bowels, together with the disease of the substance of the lungs, and the pleuritic effusions, are to be regarded as accidental circumstances; whereas the inflammation of the bronchial membrane is an essential part of the disease, and may be traced from the beginning of the complaint.

Treatment.—In the slighter forms of this disease, as in Scarlatina, very little treatment is necessary, further than confinement to one room, the exhibition of gentle laxatives, and low diet. The medical attendant should be still more watchful in this disease than in Scarlet Fever, at the period when the eruption naturally recedes, for reasons already mentioned. In the severer forms of Measles, bleeding is often necessary during the eruptive fever, when the pectoral symptoms run high, and appear threatening; and also when coma and convulsions take place, both of which are more likely to happen, but particularly the latter, if the child be suffering from difficult dentition. I was called to see a fine boy of two years of age, who, during the eruptive fever, was seized with convulsions in the night, at the period when the eruption ought to have made its appearance, and from whom nine ounces of blood were taken. Next day he had nine or ten leeches applied to his head: the symptoms were afterwards exceedingly slight, and he made a rapid recovery. He bore the bleeding without any tendency to syncope, while his brother, a boy of twelve years old, labouring also under the same disease, and who required blood-letting for pectoral symptoms, fainted upon the loss of two ounces.

When bleeding is necessary, it ought to be performed in

the manner already described when treating of inflammatory fever; a sufficient quantity should be taken as early as possible in the disease, and the operation ought to be repeated at short intervals; but when the bronchitic symptoms have been allowed to go on neglected till the air passages are gorged with mucus, bleeding is a very questionable remedy, and no doubt often does irreparable mischief, for reasons which will be fully noticed when treating of bronchitis. Leeches are to be employed as directed in Scarlatina, and also blisters.* Antimony is also highly serviceable; and opiates in the last stage, when there is restlessness and irritability, if the air passages are not filled with mucus. The warm bath affords much comfort to the patient in all the exanthemata, every night, or every other night, after the eruption has declined, and when the cuticle is exfoliating. During recovery, great attention should be paid to the diet, clothing, and state of the bowels, so as to avoid the disagreeable circumstances which so often follow the exanthemata, viz. the formation of tubercles in the lungs; inflammation and ulceration of the mucous membrane of the bowels, producing the disease which is called Tabes Mesenterica; and also glandular affections of the neck, inflammation of the eyes, and chronic eruptions of the skin.

This is a very different line of treatment from that which is still recommended by Dr James Hamilton jun. and which is founded upon the most curious notion that can well be conceived, viz. that the bad symptoms in Measles are not occasioned by inflammation, but by "*torpor of the lymphatics.*" But as this statement may not be credited, Dr James Hamilton jun. shall be allowed to speak for himself. At page 377. of the work already quoted, last edition, the following passage will be found: "As the debility which always attends and follows Measles is the most prominent feature in the progress of the disease, it is not easy to understand the reasons why practitioners have been led to overlook so obvious a circumstance. The objections to wine and nourishing diet, which it is so often

* When a blister is applied to a child, under any circumstances, the part should be carefully examined daily by the medical attendant, but more particularly in the eruptive fevers.

necessary to combat, probably arise from the supposition, that the frequency of the pulse and the cough are the effects of inflammation, when in fact they are occasioned by "*the torpor of the lymphatics*"!!!

SMALL-POX.

Small-pox is generally divided into three varieties, viz. 1. Distinct; 2. Confluent; 3. Modified. The first obtains that name when the pustules are distinct, and do not run into each other; the second is denominated Confluent when the pustules are very numerous, and coalesce; the third variety is so named from the influence of certain well-known causes that modify the disease, and render the symptoms less severe, and the cases less dangerous.

This disease commences with rigors, followed by febrile symptoms, which continue from forty-eight to sixty hours, and even longer, before the eruption appears; and it is no uncommon thing for children to be seized with convulsions during this period. The attack is frequently very sudden; vomiting generally occurs; there is pain in the head and back; and the patient complains very much of oppression at the præcordia, and pungent pain in the pit of the stomach, much increased on pressure; there are also decided marks of general disease of the mucous membranes, and more particularly that of the bronchi, announced by dyspnœa, cough, and wheezing.

The eruption first appears on the face, in the form of small red papulæ, and afterwards extends over the rest of the body. About the third day, a vesicular appearance is observed on the top of each spot, which is soon depressed in the centre, and is found to contain a transparent fluid, with an inflamed circular margin. About the sixth day the eruption loses the depression in the centre, and instead of serum, will now be found filled with a puriform matter. When the pustules are numerous, the parts swell much, and the neighbouring skin is of a red colour, from the extension of the inflammation. About the seventh day, some of the pustules on the face burst, and upon the eighth or ninth they begin to dry and scab over the rest of the body. The swelling, which affects

the face, hands, and feet, more severely than other parts of the body, gradually declines; the skin remains of a dark-brown colour after the scabs fall off, and it is many weeks before the surface recovers its natural appearance.

This is the course which the Distinct Small-pox generally runs, and when treated properly it is rarely fatal, every thing depending upon the state of the lungs and brain.

In the Confluent Small-pox, all the precursory symptoms are more severe; the eruptive fever runs higher; pain in the epigastrium and dyspnœa are more complained of; convulsions and delirium also more frequently take place; and the patient runs more risk of secondary fever, and danger from extensive inflammation, ulceration, and sloughing of the skin.

In both varieties, but particularly in the Confluent, copious salivation sometimes takes place, and soreness of the throat is a marked symptom; upon examining the mouth and fauces, vesicles or pustules may be observed on the tongue, and as far down the pharynx as the eye can reach. I have seen the same appearance on the mucous membrane of the rectum, in a case of Small-pox in which there was prolapsus ani; and in the year 1823, a great number of my pupils had an opportunity of seeing a similar case. I am not aware whether this appearance in the fauces and rectum follow an increase and decline simultaneously with the eruption on the skin. In some severe cases, petechiæ are seen, when the eruption has begun to decline; bloody vomiting and diarrhœa, with tenesmus, take place; and the dyspnœa frequently increases as the disease advances.

The inflammation in the skin is frequently so deep and severe, that the death of a portion takes place, perhaps of the cellular substance, as in carbuncle, and this is one cause of what are called pock-marks.

In Small-pox, as well as in other acute diseases, there is a congestive form, in which the system is unable to raise sufficient re-action; there is consequently more oppression; the surface is pale; the eruption flat, and never matures properly; the dyspnœa is very considerable; and I verily believe this is the form which is called the most malignant.

In severe cases, death takes place before the eighth day, but,

generally speaking, the fatal event happens some time between the tenth and seventeenth days. The proportion of deaths is said by Dr George Gregory, who must be a very good authority upon this subject, to be about one in every six persons who receive the Small-pox in the natural way. But during the prevalence of an epidemic, the mortality is sometimes one half. Indeed, it appears that, during a severe epidemic at Ceylon in 1819, the number of native inhabitants taken into hospital at Kandy, amounted to 931; of these 525 died. Since the publication of the first edition of this work, I had occasion to attend 50 cases of Small-pox, all of which were distinctly traced to the imprudence of a woman who exposed her unvaccinated child to the contagion, when visiting a sick friend. Of these 50 patients, 35 had gone through the process of vaccination; 15 had never been vaccinated, (they were infants under one year of age.) All the protected cases recovered. Of the 15 unprotected cases, 10 died. Three only of the 15 had the disease slightly. Of the 5 children who survived the attack, one did not recover perfectly, and died of chronic bronchitis some months afterwards.

Appearances on Dissection.—Head.—I have seen marks of inflammation of the membranes, evinced by a considerable arborescent vascularity on the surface of the brain, the vessels of the pia mater being greatly loaded with blood; together with effusion under the arachnoid, and into the ventricles. But it becomes me to speak with diffidence with respect to this part of the subject. Dr George Gregory says, at page 105, that he has "never been able to trace any morbid appearance in the head," which is rather at variance with the results of my limited experience, and with a statement which he subsequently makes at page 108. In directing the mode of treatment, he says, "It is to be remembered also, that in Small-pox, fully as much as in any other form of fever, there is a tendency to congestions and inflammations in the head and thorax." "A patient," (says Batting, p. 76,) "during the cure of a very extensive fracture of the skull, was seized with Small-pox, &c. It was curious to observe in this patient the appearance of variolous pustules upon the granulations of the dura mater."

Although I have been prevented, by the impatience of surviving friends, from opening the head as often as I could have wished, yet many opportunities have been afforded me of examining the contents of the thorax and abdomen. I have seen pustules in the pharynx, larynx, trachea, and œsophagus, in those who died on or before the twelfth or thirteenth day, on some occasions closing up the larynx. The mucous membrane of the bronchi very vascular, and the air tubes completely gorged with matter, most frequently of a reddish colour; but in no instance have I been able to discover a pustular appearance below the bifurcation. The substance of the lungs gorged with blood, and in the first and second stages of inflammation; and in one instance there was pleuritic effusion. On examining the body of a deformed girl, who died under an attack of Confluent Small-pox, the peritoneum and pleura were studded with small circular spots, which looked like a faded eruption, but perhaps they might have been produced in the manner which we sometimes see in cases of purpura. I have observed nothing in the stomach to account for the severe burning pain complained of in the epigastric region; the mucous membrane has certainly shewn vascularity, and has been covered with a viscid exudation, the follicles being much increased in size, which appearance often extends throughout the whole intestinal tube. In three or four instances, I have seen ulcers having a pustular appearance, with a depression in the centre, in the jejunum, ileum, and also in the large intestines, of which the preparations and drawings are in my museum; and some of them were surrounded by an inflammatory areola.

Treatment.—Small-pox under every form is a serious disease, for however mild it may appear in its attack, its consequences are always to be dreaded. The confluent, however, is a very dangerous disease; and we are to be guided in the treatment by observing the state of the brain, and the organs contained within the thorax, as well as the condition of the surface of the body.

It was formerly the custom to keep patients very hot, and to employ stimulants; and the consequence was, that the mortality was immense; but for many years past, patients have

been kept cool, and the antiphlogistic regimen recommended, but, I fear, too little practised, from the dread of putridity. Bleeding has been often employed, and strongly recommended, in this disease, particularly during the eruptive fever; but it has as often been condemned, because it destroyed that strength, which, it is alleged, is so much required in the latter stages of the disease. But the same language is used in the purest inflammatory fevers. In all the successful cases of confluent small-pox occurring in adults, which I have treated, except one, amounting in all to about eighteen, bleeding was employed, and largely employed, in the eruptive fever, to moderate what was thought to be local inflammation, without suspecting that they were cases of small-pox; several of the sufferers were my pupils, who had had themselves bled before they sent for me. In a number of instances, blood has been drawn even after the appearance of the eruption, and with decided benefit; but upon the whole, it is perhaps best at that period to trust to leeches for relieving local inflammations. The state of the throat and air passages requires daily and minute examination, and after the eruption comes out, the application of leeches is often necessary to the neck, and also to the chest, to reduce inflammation. Bleeding before the appearance of the eruption may be expected to moderate that symptom, which is of the greatest consequence, as many die from the severity and extent of the external inflammation. The appearance of petechiæ does not prevent me from ordering the application of leeches, in cases which require this practice. With respect to other points of treatment, they are similar to those which have been recommended in scarlatina, measles, and other febrile diseases. I may be allowed, however, on this occasion, to insist on the propriety of trusting to nature a little more than is generally done, when the patient begins to convalesce, avoiding attempts to hurry it on, and restore the strength, which, in a great proportion of cases, is the cause of secondary fever. A number of disagreeable circumstances often take place as sequels of small-pox, and the most painful one is the formation of boils on various parts of the body, and sometimes even carbuncles, of which there are successive crops tormenting the patient for weeks. Glandular

affections also frequently follow, as well as *ophthalmia tarsi*, and *ophthalmia purulenta*. I can state from experience, that it is a good plan to open the pustules on the face early, in order to prevent marks.

Modified Small-Pox.—There are several circumstances which are said, in medical language, to modify this horrible disease. The mysterious power of vaccination in preventing small-pox is now admitted; experience, however, has taught us, that this antidote does not always succeed; but the generality of cases of small-pox which follow vaccination are very mild. Individuals are sometimes attacked also a second time with small-pox, and in my comparatively limited experience, I have known upwards of twelve well-authenticated instances. The first attack is generally supposed to modify the second, and to render it milder; but it is curious, that all my cases of secondary small-pox, with the exception of two, were remarkably severe; whereas I have rarely seen a severe case of small-pox after vaccination.

Previously to the great discovery of Dr Jenner, respecting the power of vaccination in preventing small-pox, the disease was modified, and rendered less severe and fatal, by inoculation. This practice had been long followed in the East, and was introduced into this country from Turkey, by Lady Mary Montague.

An interesting question arises, to determine why the inoculated small-pox should be so much milder than the natural?

This is, perhaps, easily answered. A proper season of the year is chosen for the operation; the patient undergoes a certain preparation, and his bowels are particularly attended to.

In the modified disease, the stages are all shorter, and the eruptive fever is slighter; the convalescence is less tedious, and the sequelæ are not so troublesome.

This disease must be treated according to the general principles already laid down.

CHICKEN POX.

This disease, known also by the name of Varicella, has been often confounded with small-pox. Those who maintain

the identity of the two diseases, and who have figured in the controversy that has been so long carried on, have nevertheless completely failed in proving their position with respect to one point, while they have succeeded in another, apparently without being aware of it. Looking at the diseases symptomatically, there is no doubt a striking difference. The symptoms are all much slighter in chicken pox; the eruption is vesicular, and there are repeated crops; and further, this disease is rarely attended with danger; but a pathological eye cannot fail to discover a marked resemblance. The only questions to be determined are the following: Does an attack of the one disease prevent the other? Will matter taken from small-pox produce varicella, or from varicella small-pox? Extensive experience enables us to answer both in the negative, and therefore they cannot be identified any more than measles or small-pox.*

With respect to the treatment of varicella, it is only necessary to mention, that it must be conducted in the same manner with other slight eruptive fevers; and it should be remembered, that some local inflammation may arise even in the very slightest of them. I have known two fatal cases of varicella, one from inflammation of the substance of the lungs in an adult, the other from inflammation of the membranes of the brain in a child eighteen months old.† Since the publication of the first edition, I have been reminded of a third fatal case which occurred in 1825, in a child five months old. Traces of inflammation were found in the chest and abdomen. The head was not examined.

MILIARY FEVER.

This disease is characterized by an irregular eruption, of exceedingly small round vesicles of the size of millet seeds,

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* Vide Dr Hennen's papers and experiments, in Ed. M. and S. Journal, Vol. xiv. p. 409.

† It has been thought proper to pass over vaccination, as it forms a part of surgery, rather than of physic; and it has been determined not to dwell upon surgical subjects in this work.

and which feels, when the hand is passed over it, as if there were small grains of sand beneath the cuticle. Each vesicle is surrounded by a slight inflammatory blush.

This disease is said to be idiopathic, as well as symptomatic. There can be no doubt whatever, that an eruption of this character occasionally appears in the course of all fevers and inflammations; and in such cases, attention ought to be directed to the original disease. It is also considered one of the diseases of child-bed. Since women in that state have been treated in a proper manner, by avoiding hot stimulating drinks, and by admitting cool air, it is not very frequently met with. It is described by authors to commence with rigors, sickness, and languor, approaching to syncope, quick pulse, heat of skin, and thirst. The eruption does not usually appear till four, five, or six days after the commencement of the febrile attack. Previously to its appearance, there is a sense of pricking, tingling or itching of the skin, sometimes attended with a benumbed state of the extremities. The patient is greatly oppressed, and complains of a sense of weight about the chest; the spirits are low, and a profuse perspiration takes place, which is frequently remarked to have a sour smell. At length the vesicles form into small scales, and fall off in a few days.

The eruption is generally distinct, but sometimes confluent; it is said rarely to affect the face, and different crops may appear in the same fever; it attacks those most frequently, who have been previously weakened by disease, fatigue, or long continued sweating, or who have had a hot regimen. The miliary vesicles often occur during the course of many of the puerperal diseases, such as milk fever, inflammation of the brain and peritoneum.

Mr Burns, in his Principles of Midwifery, p. 420, says, "Whether the miliary fever be idiopathic or symptomatic, the treatment is the same." If he mean to state, that slight miliary eruption is to be treated in the same manner as miliary eruption "depending (to use his own expressions,) on fevers connected with a morbid state of the peritoneum or brain, which generally prove fatal," I cannot concur with him, as the eruption is to be regarded only as an accidental symptom of another disease.

Treatment.—If this disease occur in the course of inflammation of the peritoneum, brain, &c. the particular disease ought to be treated in the proper manner, without reference to the eruption. If not, the bowels are to be regularly attended to, sweating is to be avoided, as well as every thing which heats the patient; and indigestible food must be prohibited. Whenever the patient is found perspiring, the linen should be changed in a careful manner, and the body properly dried and rubbed with a soft towel; in this case sulphuric acid will be found very useful, and there can be no objection to the moderate use of wine and bitters.

ROSEOLA.

Roseola is a fever attended by a rose-coloured efflorescence, without wheals or papulæ, and apparently not contagious. It has often been confounded with measles and scarlet fever, and I have seen the wisest heads baffled in determining the point; in one case in which such a division of opinion took place between two physicians, a third declared that the patient laboured under small-pox, and the result of the case proved that his opinion was correct.

This is a disease which may very frequently be traced to indigestible matter, and particularly fruit, in the stomach and bowels; therefore the treatment is very simple, so simple, that even in the higher ranks, medical men are seldom consulted; and they would probably be still less frequently called, only that parents are afraid that it is scarlet fever. Confinement, attention to the bowels, and avoiding solid animal food for a few days, are the best means which can be adopted.

Willan and Bateman have given an account of *seven varieties* of this disease, but no practical benefit can be derived from such minute hair-breadth distinctions as these and other skin nosologists have drawn.*

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* It affords me great pleasure to refer to Mr Plumbe's Practical Treatise on Diseases of the Skin. That gentleman has taken up correct views of the subject, and treats of all the affections pathologically, therefore he has few sub-divisions. It is the best work we possess on the subject.

URTICARIA.

This disease is known to the vulgar by the name of nettle rash, and is distinguished from other febrile eruptions, by circular elevations of the cuticle, of a red colour, with a white spot in the centre, and is usually termed a wheal; and here again Willan and Bateman have unnecessarily described six varieties.

The eruption is generally preceded by marks, the most distinct, of gastro-intestinal irritation and fever; and the patient is affected with restlessness, oppression, languor, and want of appetite; his tongue, however foul, will in general be found red at the tip, and round the edges. If the eruption be very general, the patient suffers much distress from the heat and itching of the parts, but the internal disorder will be found to be relieved. Sometimes the rash appears only when the individual is heated by exercise, or by wine, or when he is undressing himself; and it is also frequently excited in a fresh part, by friction or scratching. This is an affection which is often produced by eating particular articles of food.

It appears to me, that individuals who are frequently subject to this affection, and others of a similar nature, during youth, are those who in after-life are liable to be affected with gout.

It is sometimes difficult to distinguish urticaria from another very painful and troublesome affection, which is known by the name of *erythema fugax;* but this is a matter of no practical importance, as both eruptions are produced by the same causes, and cured by similar remedies.

Urticaria may continue for an indefinite period, and may be reproduced in particular constitutions every time the stomach is disordered.

Treatment.—Nothing is more simple than the management of a case of urticaria; but much more depends upon the patient himself, than upon the remedies which a physician may prescribe. The patient must find out, by experience, the articles of food which disagree with him, and he must have sufficient resolution to avoid them for a time. It should be impressed upon young practitioners, that danger sometimes proceeds from the repulsion of the eruption by cosmetics.

A very beautiful young lady was frequently troubled with febrile symptoms and this rash. She was attended by an eminent physician, who gave her a large bottle of a strong solution of sugar of lead, with directions to sponge her body with the wash when her skin was very itchy. Upon the first occasion, she stripped herself, and applied it as extensively as she could, and it surprised her that the itching suddenly ceased; upon examination, the eruption, which was very vivid before, had now almost entirely disappeared. She instantly fell sick, oppressed, and fainted; and continued for such a considerable time in a state of insensibility, that her attendants were doubtful of her recovery. She survived, but has not since known what it is to enjoy a day's health.

Besides avoiding every thing that disagrees with a patient, it may be mentioned that gentle laxatives are essential remedies; and that an emetic is highly useful, if any indigestible matter be still in the stomach.

THE PLAGUE.

The disease which is now to be shortly described, appears to be an endemic fever, attended during its course by buboes, carbuncles, or some eruption on the surface of the body. It appears to be, under certain circumstances and seasons, highly contagious; and it would seem also to be occasionally epidemic.

The accounts we have of the phenomena of this disease are so contradictory, and the histories of morbid appearances are so few and meagre, that I have not sufficient data before me wherewith to form pathological descriptions.

The plague, it would appear, is sometimes very mild, at others very severe; and if it be a fever, of which I have now no doubt,* the symptoms must not only vary in intensity, but they must also have a very wide range of character. The

* I have had the pleasure of enjoying several communications with Dr M'Guffuc, who resided many years in Turkey, and who has had ample opportunities of seeing the disease. It is his decided opinion, that the plague is a fever attended by buboes, &c.

disease must have varieties and shades arising out of one organ being more severely affected than another, as well as from local congestions and inflammations. It appears to be modified also by season, situation, and habits of individuals. It is not to be wondered at, therefore, that different writers should have given different histories of the symptoms and progress of this disease; but as yet we have no pathological description that can be depended on; therefore my observations must be brief.

It seems to be the opinion of some physicians, that the plague is nothing more than a malignant typhus, and the only peculiar symptom that has been described is the bubo, carbuncle, or the appearance of some eruption on the surface of the body; and all writers agree in opinion, that the safety of the patient very much depends upon the suppuration going on speedily and kindly. The plague, therefore, seems to be closely allied to the exanthemata, and more particularly to small-pox.

The disease appears to be ushered in by rigors and oppression, followed by heat of skin, great prostration of strength, giddiness, and headache; the expression of the countenance is besotted, and the eyes have a muddy, glistening appearance. It is stated, however, that in some cases there is a ferocious aspect; in others, the patient's look is subdued. The pulse varies much; it is sometimes quick and full, at others, quick and small; sometimes described as being hard, at others soft. The intellect is sometimes clouded; at others, there is insensibility and fierce delirium; occasionally stupor takes place, and in some cases the functions of the brain remain distinct and clear. The patient, in general, seems indifferent respecting his fate; the tongue is at first moist, although it may be more or less loaded; there is sometimes constipation, at others diarrhœa; the stools are always highly offensive; the stomach is in general very irritable, every thing taken being almost instantly rejected.

In a few days from the first attack, generally the third, pains, often acute, are complained of in the groins and arm-pits; and unless the swelling and suppuration of the glands go on quickly, death soon takes place. Sometimes carbuncles appear with or without the buboes; but petechiæ more frequently

than carbuncles. Discharges of blood from the stomach and intestines often take place in the last stage. Sometimes the disease is very rapid in its progress, running through its course in thirty hours. It is said, that if the patient survive the fifth day, the bubo being completely formed, he may be pronounced to be doing well, if not actually out of danger. As in the acute eruptive diseases, there are two periods fraught with greater danger than others, viz. that at which the bubo makes, or ought to make, its appearance, and that at which it ought to be matured.

The convalescence, as in all severe fevers, is very slow, which is attributed to the extremely debilitated state in which the patient is left; but there can be little doubt that a great deal is generally owing to bad nursing, and want, perhaps, of sufficient comforts.

It is a curious and interesting fact, that Sir James M'Grigor and Sir John Webb, the former the Director-General of the Medical Department of the Army, the latter Director-General of the Medical Department of the Ordnance, should have distinguished themselves in the same field of investigation, having been both employed with our Egyptian army above thirty years ago, when they displayed that talent, zeal, and humanity in the performance of their duties, which endeared them to all who were placed under their care. It was there these distinguished persons gave evidence of the great powers of mind and regular habits of business, which marked them out, as men admirably qualified for the high situations in which they have been subsequently placed, and which they have filled with so much honour to themselves, and benefit to the service. Their statements respecting the plague, will be read with much interest and advantage.*

Treatment.—Sydenham recommended free and repeated venesection in this disease, during what may be called the eruptive fever, and it has occasionally been practised since his time; but even Sydenham himself seemed latterly to prefer

* Sir James M'Grigor's Medical Sketches of the Expedition from India to Egypt.—Sir John Webb's Narrative, 6th vol. Medical Transactions.

sweating the patient, under the idea of withdrawing the pestilence in that way from the body, which weakened him less than blood-letting. Some individuals condemn bleeding entirely. The same difference exists with regard to purging. Cullen condemns both, upon theory, but recommends the violence of re-action to be moderated, as far as it can be done, "*by taking off the spasm of the extreme vessels.*" The application of oil to the surface of the body is believed to be a preservative, and it has also been employed to cure the disease; but even upon these points, such opposite statements have been promulgated, that we have no means of forming correct opinions. A great number of other remedies have been strongly recommended,—as mercury, wine and bark, opium and æther, emetics, diaphoretics, and the cold affusion; and if my notions of the disease be at all correct, there are cases and stages in which several of these remedies, if not all of them, may prove highly beneficial; but there are others in which they must have the opposite effect. For example, if there be violent inflammation and congestion of the brain, no one will say that wine, æther, bark, or camphor, are the proper remedies; but in which cold applications to the head, and the action of mercury, might be beneficial. In the last stage of the disease, the lancet would be most improper, when wine, æther, opium, and even brandy itself, may snatch the person from the grave. If the stomach be irritable, which it almost always is in this disease, no one, I hope, would think of making it more so by exhibiting emetics and large doses of bark. It is to be feared that the recommendation and condemnation of various important remedies have taken place, without reference to the stage of the disease, the particular organ or organs affected, the peculiarities of the prevailing distemper, as well as the idiosyncracy of the patient; but it becomes me to speak with diffidence upon a subject respecting which I must acknowledge myself to be profoundly ignorant.

The reader who wishes for more minute information, must peruse the various works published on this subject; or a most excellent abstract of them, in the 3d volume of Dr Mason Good's Study of Medicine. The chapter on the Plague appears to me to be the most meritorious part of his work.

PART II.

DISEASES OF THE ORGANS CONNECTED WITH THE DIGESTIVE SYSTEM.

CHAP. I.

DIFFICULT DENTITION.

Few children go through the process of Dentition without some suffering; and when teething is difficult, many complaints arise, which fall under the denomination of Infantile Diseases. These are, fever; determinations to the head, occasioning inflammation of the brain and its membranes, or convulsions; cough, and difficulty of breathing; bowel complaints; cutaneous and glandular affections; inflammation of the eyes, and sores behind the ears.

Authors have long remarked, that children who teethe at an early period, have least suffering; and the same observation has been made with respect to those who have a considerable flow of saliva. There have been instances of children born with teeth, which happened, it is said, to Richard III. and Louis XIV.; and Haller has cited a considerable number of similar cases.

Some infants cut the first pair of teeth by the end of the third month; in other instances, not until they are sixteen or eighteen months old. In general, however, they are cut between the sixth and eighth month. The two centre incisors of the lower jaw commonly appear first; in the course of a month, their opponents in the upper jaw protrude; after this, the two lateral incisors of the lower, and then those of the upper jaw, appear. Between the twelfth and sixteenth month,

the anterior grinders of the lower, and then those of the upper jaw are cut; subsequently the cuspidati or eye-teeth protrude, and after these the posterior grinders; so that children usually have the first set of teeth (twenty in number) complete, by the time they have attained the age of two years, or two and a half. There are generally intervals of several weeks between the cutting of each pair.

The formation of each tooth goes on in a membranous and vascular sac, which is firmly united to the gum; and if we attempt to tear the gum from the jaw, the sac is brought along with it. This sac, it would appear, subsequently becomes absorbed; but when it is thicker than usual, more vascular, and long of being absorbed, it is one of the alleged causes of Difficult Dentition. The irritation produced by the pressure of each tooth against the gum, in its advancement to the surface, particularly when the child teethes late, and the gums are hard and cartilaginous, also occasions the different phenomena which are ranked under the same appellation.

A child in such circumstances is observed to be restless, fretful, and feverish; to sleep little, and is often seized with sudden fits of screaming. The bowels are out of order, and the evacuations fetid. On some occasions, marks of determination of blood towards the head take place, viz. great restlessness, flushed face, sudden fits of crying, apparent suffering when brought into the erect posture, startings, slight spasmodic movements of the muscles of the face, and even general convulsions.

Many children, whenever they cut a tooth, are teazed with a cough, depending on bronchitic irritation or inflammation. This is announced by wheezing. Others suffer from constipation, while many are afflicted with troublesome diarrhœa.

Cutaneous and glandular affections are often observed during Difficult Dentition. The glands of the neck, and the submaxillary, are those generally affected, and they sometimes suppurate. Of the eruptions, the porrigo larvalis, and lichen, are those most commonly seen.

Occasionally there is inflammation of the eyes, particularly those forms which are termed ophthalmia purulenta and ophthalmia tarsi; and sores take place behind the ears, which seem

to operate beneficially. This statement will shew the propriety of examining the mouth, when we are called to a child labouring under these or any other affections during the period of Dentition; when the mouth may feel very hot, and on examining the gum over the tooth which we suspect, it will be found to be elevated, very red, sometimes white and shining: the ridge or seam, which runs along the jaw in the direction of the teeth, will in general be found to have disappeared. If such appearances present themselves, the tooth may be pronounced to be far advanced; at all events, it is well to be able to say whether it be near at hand or not, as mothers are often disappointed if the tooth over which the gum is cut, does not shew itself in a day or two; whereas, if they are previously told that it is not so near, they will in general be satisfied. The best remedy is to divide the gum, down to the very tooth, by crucial incisions. Many people entertain a dislike to this operation, from the idea that the gum is hardened by the cicatrix; but they may be safely assured that this is not the case, and that the tooth will be advanced, certainly not retarded, by the scarification. If the operation be effectually performed, it constitutes the principal part of the treatment. Should the gum even heal immediately, the bleeding will remove the local inflammation, upon which the febrile symptoms frequently subside. The bowels must be kept freely open, and the tepid bath is often of great service. If the face be flushed, with other marks of determination to the head, the application of cold may be tried; the child should at least sleep without its cap, and use a hard pillow; frequently have I seen it advantageous to change a down pillow for one filled with fine shavings. It is probable that some of the serious affections of the brain to which children are liable, may be attributed to warm caps and soft pillows. The bowels must be more freely acted upon; and if these means do not succeed, it will be well to apply leeches to the feet, which may be subsequently placed in warm water, for the purpose of encouraging the bleeding; besides which, the hœmorrhage is better under command upon the application of a bandage. Many practitioners are heard to complain of the great difficulty in stopping the bleed-

ing in young children, but I never experienced any impediment. In the *first* place, we ought always to point out the situation where the leeches ought to be placed, which I take care shall be, if possible, over a bone, against which pressure can be applied. *Secondly*, not to apply too many at a time. It is rare to find more than one orifice troublesome, from which the bleeding will be easily suppressed, by gently pinching the skin between the finger and thumb for a few minutes. I have never been obliged to use the actual cautery, or even caustic.

We are often not called, however, till convulsions have actually taken place, which are to be treated in the manner to be subsequently described in the 2d volume. I may, however, mention here, that the child should be put into a warm bath as soon as possible; the face sprinkled with cold water; and if a fit should continue long, and threaten danger, a vein should be opened on the instant. Should the external jugular be readily observed, blood may be drawn from it; but if a vein cannot be found, the hot bath and stimulating frictions must be trusted to till leeches are obtained. Great attention should be paid to keep up a brisk action in the bowels, by means of suitable doses of calomel and jalap, or calomel combined with rhubarb or scammony, together with castor or croton oil and injections; but all these means will be of no avail unless the gums be freely scarified.

Cough is occasionally a troublesome attendant on teething, and practitioners will be found, in general, to act empirically, unless they are able to ascertain whether it depend upon any diseased action in the lungs, or merely upon irritation about the epiglottis and pharynx. If the latter, a common cough mixture may do good; but it will be inefficacious, perhaps injurious, if the cough proceed from bronchitis, which may sometimes require the application of leeches or of a blister, or contra-irritation produced by a mustard plaster, or the ointment of tartar emetic. If the lungs be very much loaded with mucus, which is easily ascertained, an emetic will be very serviceable; but the treatment of bronchitis need not be dwelt upon in this place. It is only necessary to state the general principles, with reference to the affection now under consideration.

When a child, who is suffering from difficult dentition, has diarrhœa, we should not be in a hurry to check it, particularly if there be marks of determination to the head. The bowel complaints of children are of so much importance, that it is necessary to treat of them in a separate article, with a view to point out their pathology; but it must be mentioned in this place, that the best practice is to exhibit a little castor oil in the first instance; and if there be any pain in the abdomen, warm fomentations are to be used; should there still be signs of suffering, a leech or two may be applied, followed by very small doses of Dover's powder, or a drop or two of Battley's sedative solution of opium.

It is very fortunate that children, upon the occurrence of the most trifling febrile symptoms, or disorder of the bowels, are liable to eruptions on the surface, because they act beneficially by removing irritation and increased action, on many occasions inflammation itself, from internal organs. When these eruptions take place during the course of dentition, it will almost always be found best not to meddle farther with them than to enjoin cleanliness; indeed, on many occasions, do what we will, the eruption continues, the child becoming better between the periods of cutting teeth. I have frequently seen great mischief done when external applications had the effect of repelling the eruption, and on more than one occasion death itself. In "*porrigo larvalis*," when there is great heat, itching, and inflammation of the part, I have found it answer well to apply leeches to the inflamed surface, and to cover the part with oiled silk. The child's hands should be muffled, to prevent the face from being scratched and disfigured.

Glandular affections may be safely let alone, unless they become inflamed and painful, when the practitioner will do well to apply either leeches, fomentations, or a soft warm poultice. If matter form, the sooner it is let out the better, in whatever constitution it may occur, there being far more danger of leaving a disagreeable mark, by allowing the pus to discharge itself spontaneously, than by using the lancet.

We are often consulted respecting inflammation of the eyes at this period of life. Generally speaking, the disease will be found to be confined to the conjunctiva; sometimes to the

tarsi; there is rarely deep-seated inflammation of the eye itself. A leech or two applied to the temple, is always safe practice, as well as a blister behind the ear; indeed Nature points this out, by the relief which supervenes upon a natural sore appearing in that situation. Let me add, that whenever we have occasion to blister a child, we should be careful that none of the powder of cantharides is sprinkled upon the surface of the plaster, which frequently creates unnecessary irritation; and above all, the blistered surface should be carefully examined every day by the medical attendant, till it shews a healing tendency, as it is apt to slough, which the timely application of a linseed poultice will very frequently check. With respect to the natural ulcerations that take place behind the ears, it is only necessary to use frequent ablution with warm milk and water, and to take care that they are not unnecessarily irritated. Great uneasiness is often produced by carelessly removing the dressing; this might always be avoided by previously applying tepid fomentations. An occasional opiate is very beneficial; but no medicine of this kind should be left in the way of an ordinary nurse, who will often administer it to secure to herself a quiet night, to the great injury of the child; even Dalby's carminative, or syrup of poppies, should never be left in the nursery. I have known many children destroyed by their constant exhibition. The American soothing syrup is another remedy that is perhaps too frequently ordered by medical men: it is supposed to *soften* the gums, and to render the process of teething easier; which it does, not by mollifying the gums, but by virtue of a narcotic principle which it contains.

A child, when teething, carries every thing to its mouth, bites it, and thereby seems to experience relief, and nothing will be found to please it more than rubbing the gums with the finger. A gum-stick promotes the flow of saliva, and amuses the infant.

CHAP. II.

DIFFICULT DEGLUTITION FROM INFLAMMATION, ULCERATION, OR ENLARGEMENT OF THE TONGUE; CYNANCHE TONSILLARIS; CYNANCHE PHARYNGEA; INFLAMMATION OR ULCERATION OF THE ŒSOPHAGUS.

Difficult deglutition may be produced by inflammation, ulceration, and enlargement of the tongue; which are often caused by the action of mercury and other metallic poisons, and still more frequently by disease of the digestive organs. If the affection be produced by mercury, leeches applied to the cheeks are said to be very useful, as also a wash composed of a solution of the chlorate of soda, or that of lime. Several serious cases of inflammation of the tongue have lately been published. Two will be found in the 92d and 93d Nos. of the Edinburgh Journal, and a fatal one in the 214th No. of the Lancet. I am inclined to believe that inflammation and enlargement of the tongue are generally owing to some temporary diseased action in the chylo-poietic viscera. The experience of any professional man may be appealed to, who is liable to derangements of the stomach and bowels, whether he has not, on such occasions, felt his tongue sometimes swollen and painful, and even slightly ulcerated in different parts of the tip and edges; and whether he has not been led to attribute such a condition to a morbid state of

his digestive organs? Whether this view be correct to the full extent or not, the stomach and bowels must be attended to in the treatment.

Children in particular are very liable to white specks, vesicles, or ulcerations on the tongue, and over the whole mucous membrane of the mouth and fauces. These specks are called aphthæ; we meet with this affection in two forms, one of which is mild, the other very severe. In the first, the treatment consists in keeping the bowels gently open, avoiding solid food, and using the warm bath. In the last, I feel persuaded, from the vomiting, griping, and purging, and the intensity of the other symptoms, that the disease affects considerable portions of the intestinal tube, and requires a different plan. Before the appearance of the ulcerations in the mouth, the constitutional symptoms occasionally run high, which are sometimes relieved upon the mouth becoming sore; so that this affection has some resemblance to the exanthemata. Mr Burns, in describing this disease, states, that "*the child is sometimes drowsy, and oppressed for some hours, or even a day or two, before the spots appear, and occasionally is affected with spasms. The fever and oppression are often mitigated on the appearance of the aphthæ.*" Children affected in this manner, suffer great pain, and are consequently exceedingly peevish. The stools are generally acrid, sour, and discoloured; there are often tenesmus, and prolapsus ani, the surface around the anus being excoriated. Successive crops of aphthæ appear, which resemble small portions of curdled milk adhering to different parts of the tongue and mouth; after a time they become yellow, and seem to slough off, but may be renewed many times. When they drop off, the parts below frequently look raw, particularly in severe cases, in which the crust sometimes becomes dry and hard; occasionally the parts look very foul, dark-coloured, and have a fetid smell. A case of an adult lately fell under my observation, in which great suffering was produced; the sloughs were most extensive, and portions even of the palate itself were thrown off.

The diseased action frequently extends into the air passages, announced by dyspnœa and cough. Children brought up by the spoon, are more liable to aphthous affections than others,

as well as those whose bowels are neglected, and are insufficiently clothed.

Treatment.—The above pathological description of the disease, leads at once to the proper mode of practice. In the two cases of inflammation of the tongue recorded in the Edinburgh Medical and Surgical Journal, V. S. and the application of leeches, produced temporary benefit only, while deep scarifications were had recourse to with permanent advantage. It is probable, however, that sufficient attention has not been always paid in similar cases to the condition of the stomach and bowels.

With respect to the severe cases of aphthous affections of the tongue and mouth, I can speak strongly of the advantages derived from the frequent application of leeches to the abdomen, if the strength be good; the warm bath, and contra-irritation on the abdomen by means of a stimulating embrocation, or the tartar-emetic ointment. The contents of the bowels should be discharged by an occasional dose of castor oil, or a few grains of rhubarb. An injection, composed of a few drops of laudanum, and a table-spoonful of starch or gruel, may be thrown into the rectum, by means of a small penis syringe; but it is difficult at all times to make a child retain it. Dover's powder, united with aromatic powder, is also a good remedy.

If a child upon the breast be affected in this manner, no other food should be allowed; if it be already weaned, ass' milk ought to be provided; but if that cannot be procured, whey mixed with a little cream, and occasionally a little thin gruel, may be substituted; beef tea, and soups of all kinds, are, according to my own experience, bad, until the disease be far upon the decline; if the child's strength be sinking, wine, properly diluted, is far less exceptionable than soups or animal jellies. A weak solution of the chlorate of soda, combined with an opiate, will be found serviceable, a tea spoonful for a dose. Considerable mischief is sometimes done, and children are very much and unnecessarily fretted, by the application of borax and sugar introduced into the mouth upon a cloth, or a finger, and rubbed so as to remove the crusts.

CYNANCHE TONSILLARIS.

There are two varieties of this affection, the acute and chronic. In the acute, the swallowing is difficult and painful; the voice is altered, and in very severe cases the respiration is impeded; the pain, generally speaking, is severe. On looking into the throat, the tonsils, uvula, and even part of the palate, are seen much swollen, and very vascular, and sometimes the throat is swollen externally. Loss of appetite, thirst, headache, and general fever, for the most part, accompany this disease; occasionally these symptoms run high, and there is delirium. In some cases, only one tonsil is inflamed; in others, the uvula only; sometimes white specks are seen upon the inflamed parts, surrounded by a viscid exudation, which present the appearance of ulcerations. The white specks alluded to, are sometimes produced by exudations of lymph, at others, by sebaceous matter projecting from the follicles.* This form of sore throat bears a considerable resemblance to the cutaneous affection termed Acne. Occasionally, however, actual ulcerations are observed in the throat.

Cynanche tonsillaris terminates in resolution; sometimes in suppuration, ulceration, and sloughing. When matter forms, the patient's sufferings are generally increased, the dyspnœa is considerable, and he is said in common language to have a "quinsy."

The most frequent cause of this complaint is supposed to be cold, produced by sudden vicissitudes of weather; but I imagine there is a combination of causes in the production of inflammation of the throat, and that the principal are a disordered state of the stomach and bowels, and the formation of sebaceous matter in the follicles. Many individuals are known to me, who never have a sore throat, unless the stomach and bowels have been for some time out of order; as well as others, who for a series of years have escaped an attack, by regulating themselves properly in this respect.

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* It has often been in my power to prove, that the sebaceous matter is one cause of a "bad breath."

Treatment.—This complaint is sometimes very little under the power of the usual remedies, unless it be attacked at the very beginning; and it is in such cases only, or to check the inflammation from running into extensive ulceration or sloughing, that V. S. is admissible. Leeches may be applied externally, under similar restrictions. It has been recommended, that they should be applied internally to the part immediately affected; in which last case, each leech is introduced by means of a tube, with a thread through the tail; but when it is thought necessary to draw blood from the part affected, it is much more easily and speedily done by scarifications, producing less pain to the patient. Blisters are very frequently useful. Females have a great objection both to leeches and blisters; but particularly to the former, from the marks they produce. Laxative medicines are highly necessary, and must be frequently repeated. Emetics are much extolled. The best gargle, if it be necessary to wash the throat, is a little warm water, or acidulated infusion of roses. Inhaling the vapour of hot water is productive of great benefit, whether suppuration is to take place or not. When matter forms, dyspnœa frequently becomes a marked symptom, therefore the sooner it is discharged the better for the patient; and it is by no means a painful operation, the relief being often instantaneous. Several fatal cases have come to my knowledge, in which it is strongly suspected that the immediate cause of death has been inflammation extending into the larynx and bronchial tubes.

Chronic Cynanche Tonsillaris may be either the consequence of acute inflammation terminating in the chronic state, or may take place as the effect of sub-acute inflammatory action; the uvula is found enlarged and hard, as are the tonsils. If the case be recent, stimulating applications are found useful, and a succession of blisters to the throat. If these means do not succeed, and the enlargement is permanent, particularly if the voice be affected, the patient becomes an object of surgical treatment, and the parts have been excised.

Sometimes extensive and troublesome ulcerations are produced as the effects of chronic, as well as of acute inflammation in the throat; and in treating these, it is necessary in the

first place to attend to the general health, by regulating the state of the stomach and bowels, and also the diet, which ought to consist of mild and digestible substances. Leeches and blisters are often serviceable; but the most efficacious application, is a solution of the nitrate of silver in distilled water, in the proportion of four, six, and even ten grains to the ounce. The ulcerated surface is to be carefully washed, before the solution is applied. This operation, however insignificant it may appear, must be done with proper care, as bad consequences have been known to follow. There is a preparation in my museum, in which the epiglottis is completely destroyed by common caustic, rudely used, which was the cause of death.

INFLAMMATION OF THE PHARYNX.

In this affection the tonsils and uvula are not invariably inflamed, but upon looking, the parts being exposed to a bright light, we can often see the throat and pharynx very vascular, and loaded with viscid lymph, which the patient is constantly making efforts to dislodge by hawking and spitting.

The pain on swallowing is fully greater than in the last described affection; I have seen patients suffering severely, some apparently in great danger. When it is recent and severe, the lancet must be used, followed or not by the application of leeches and blisters, according to circumstances. The inhalation of the vapour of hot water affords remarkable mitigation of the symptoms; and in slight cases, nothing further is required but to keep the bowels open, and allowing moderate nourishment.

INFLAMMATION AND ULCERATION OF THE ŒSOPHAGUS.

Of all the structures in the human body, the œsophagus is perhaps the least liable to disease. In general it is difficult to detect inflammation of the œsophagus till ulceration and constriction take place. I have seen one case only of universal inflammation of this tube not caused by poison, in which the lining membrane was in a sloughing state. There is a prepa-

ration in my museum that displays similar appearances; in this instance, however, there were no symptoms indicative of disease in the tube. In the former case which I attended, there was pain and difficulty in swallowing. Both patients were also affected with Phthisis. Inflammation may be partial, affecting only a part of the calibre of the œsophagus; and if ulceration follow, there will be no contraction, but the patient will feel slight pain and a momentary stoppage when the bolus of food arives at the spot. If the whole calibre of the œsophagus be involved in the inflammation, the pain will be more considerable, not so much from constriction as from the effort to vomit, which is produced by irritation. If it terminate in ulceration, occupying the whole tube, constriction will take place, with increased difficulty in swallowing. Patients have been known to be three and four days, and even a week, without food.

Treatment.—Attention to the bowels, topical bleeding, and extensive contra-irritation, are the best means that can be employed. Nourishing injections thrown into the rectum, are to be assiduously administered when the patient is unable to swallow a sufficient quantity of food. It is the practice in such cases, to introduce instruments to dilate the œsophagus, but I have seen it very injurious in several instances, when the operation was performed during the inflammatory stage. Affecting the system with mercury has been highly extolled, but perhaps without sufficient consideration. If the constriction be permanent, after the inflammation and irritation are subdued, a surgeon may be called to make cautious trials with a bougie; perhaps a common œsophagus tube will be found the best instrument for this purpose.

CHRONIC AFFECTIONS OF THE ŒSOPHAGUS.

Sometimes the gullet is diminished in diameter by fleshy excrescences; tumours, or occasionally scirrhous contractions are observed; and more rarely, ossification. Some individuals have survived contractions of the œsophagus for a great many years, being obliged to have food introduced into the stomach

through a tube. Chronic diseases of the œsophagus are frequently found to have made considerable progress before their existence is even suspected.

The smoke of tobacco and stramonium, the abuse of mercury, and drinking fluids either excessively hot or cold, have been assigned by writers as the general causes, but perhaps too hastily.

Of all the remedies which have been recommended to us in such cases, the bougie is undoubtedly the best; and if at any time there should be much pain, leeching, contra-irritation, and narcotics, are to be had recourse to.

Many other circumstances produce difficulty in swallowing, as for instance, want of the uvula, tumour in the pharynx, ulcerations in the larynx, or upon the epiglottis. The first two belong more to the surgical department than the medical, and therefore cannot be treated of in this work; the last two shall be noticed among the diseases of the respiratory organs.

CHAP. III.

INDIGESTION.

Under this head I shall treat of the affection which is commonly called Dyspepsia, with its usual attendants, Flatulency, Tympanitis, Pyrosis, and Heartburn; and also of the painful affection termed Gastrodynia.

Dyspepsia is a most troublesome disease to treat; and I believe the physician, to be able to do so effectually, should have suffered from it himself, as one who has had the good fortune never to feel as if he had a stomach, can scarcely believe, or almost listen to, the complaints of those who have experienced that sensation. One symptom is more prominent and urgent in one case than another; a little flatus in the stomach occasionally produces violent nervous symptoms, sometimes as if the brain were seriously affected; and the whole will vanish after one or two sour eructations. Some patients appear as if they could not survive the difficulty of breathing under which they labour; and it will be found to depend, perhaps, on flatus rising in the œsophagus, producing the affection called *globus hystericus*. Remedies have not the same effect in any two cases; all plans of treatment will most generally fail, unless the patient himself can discover what articles of food agree with him better than others, and has resolution enough to adhere to a proper regimen.

Dyspepsia may arise from various causes. Perhaps the following are the principal causes:—*First*, From simple functional derangement of the stomach, duodenum, liver, spleen, or pancreas; *second*, From indigestible and acrid substances taken into the stomach; *third*, From structural derangements

in the digestive apparatus; *fourth*, From long-continued constipation; *fifth*, From derangements in other important organs.

Dr Wilson Philip, who has written on this subject, has divided the disease into three stages. This plan would do admirably well, if dyspepsia were as regular in its march as intermittent fever; but in practice, such an arrangement will be found to be too arbitrary to be useful.

First Stage of Indigestion.—The first symptoms of indigestion are a sense of fulness and uneasiness in the region of the stomach, arising either from too great a load of food, from some indigestible article, or from flatulent distension of the stomach; frequent acid eructations, constipation, loaded tongue, and some thirst, follow. Sometimes sore throat is complained of, and a feeling in the eyes, as if sand were lodged between the eye-lids and ball; it is difficult to keep the hands and feet sufficiently warm; and occasionally there is severe headache, accompanied by nausea, or violent vomiting.

These symptoms may steal on slowly, and from being felt only occasionally, are neglected; or they may be produced suddenly, by indulgence in improper food, a copious draught of very cold water, or from anxiety, grief, fright, or other severe mental affections, or by too violent exercise after a full meal.

Physicians are rarely consulted in the first stage of the complaint; for the patient either drives on through it, or relieves himself by a day or two's abstinence, and by taking a laxative. If a person, however, take little heed of himself, he is soon heard to complain of restless nights, oppression at the præcordia, and becomes sensible of diminution of strength, and heat of skin; his appetite becomes fastidious; he is either very costive, or is affected with diarrhœa. The alvine discharge is sometimes very bilious; at others white, shewing a want of bile; it is adhesive, drops with difficulty from the body, and is very fetid. After the patient obtains passage from the bowels, he still feels much loaded, and very often considerable quantities of half-digested food will be observed in the stools.

Persons labouring under such symptoms, will very generally be heard to attribute their complaints to a "*fit of the bile;*"

and many medical men, I fear, confound stomach disorders with those of the liver, and too frequently exhibit powerful mercurial preparations, to the great injury of the patient.

Treatment of the first stage.—The cure of this form of the complaint is not difficult. The patient is to be directed to abstain from the use of soups, and whatever else distends the stomach; to eat and drink little, and to leave off while he has still an appetite; to keep his bowels open with a little rhubarb, Henry's calcined magnesia, or a compound colocynth pill; and to take regular exercise. He should, as much as possible, avoid any cause which has a tendency to produce either mental excitement or depression.

The second stage of Indigestion is marked, according to Dr Wilson Philip, by the supervention of tenderness in the epigastric region, and a hard pulse; and he very justly considers these two symptoms of much practical importance. The patient now feels very sensible to the impression of cold; he is often chilly, and afterwards complains of flushes of heat; his hands and feet have sometimes a dry, burning sensation, particularly during the first part of the night, extremely cold at other periods, painfully so when he first goes to bed; his skin becomes hot in bad cases, but towards morning a perspiration breaks out, and the patient enjoys some quiet sleep. When he awakes, although he may complain of not feeling refreshed, yet the symptoms are greatly relieved. His debility is now greater, with some emaciation; he complains of languor, and always desponds. There is considerable uneasiness and fulness in the epigastric region, and an occasional darting pain towards the spine, together with a burning sensation in the stomach. Palpitations are now, perhaps, very troublesome; they are not constant, but become worse after dinner; the least thing agitates the mind, and produces them. The patient sometimes coughs and expectorates in the morning, and supposes he is consumptive; or there are vertigo, and sometimes violent headache, with imperfect vision, as, for instance, seeing two objects instead of one, or only half an object; and it is impossible to persuade him that he is not threatened with apoplexy.

In cases of dyspepsia, some individuals, particularly those

with light hair, are very liable to inflammation of the tarsi, with purulent exudation; and sometimes little abscesses form, which are called in common language "styes." The kidneys frequently suffer, the flow of urine being either too sparing or too copious, attended with complaints which are called "gravelish." It is my belief that dyspeptics are more liable than others to inveterate skin diseases, and to stone in the bladder. It will be found also that most of the individuals who labour under hœmorrhoidal affections are dyspeptics; and it may be mentioned, that I have rarely seen a person afflicted with *fistula in ano*, excepting when it proceeded from external injury, who has not been a martyr for a long period to this class of complaints. Pure surgeons should make themselves acquainted with these facts, and a great many other points of medical pathology.

It is rare to observe all these complications, but they are occasionally met with in the same patient. I have seen many persons consider their lives as burdens to themselves, and there is often a strong tendency to commit suicide.

Should the symptoms continue severe for a considerable time, some serious organic lesion may be dreaded; but the lungs, liver, kidneys, and brain, are the organs that most frequently suffer, and form what may be termed the third stage of dyspepsia.

Treatment of the Second Stage.—Whenever the patient complains of tenderness in the epigastric region, with a hard pulse and bad nights, local bleeding by cupping or leeching frequently produces the best effects. My own plan, in severe cases, is to apply leeches, to the number of twelve or eighteen, two or three times if necessary, before contra-irritation is had recourse to; and the best method of producing irritation, is by frictions with the tartrate of antimony ointment, which must be persevered in, first on one part, then on another, so as to produce a succession of pustules. I have been led to place much dependence on this practice, by observing that dyspeptics have sometimes been relieved, at others cured, upon the appearance of a spontaneous eruption. In severe cases, the diet should consist of gruel, arrow-root, milk, calf-foot jelly, light pudding, and good bread; and these should be allowed

in limited quantity; more than a breakfast tea-cupful at a time will overload the stomach. Soups and vegetables should be avoided, at least for some time. Gentle laxatives, so as to open the bowels twice a-day, are to be used. The tepid bath will be found very useful; but perspiration must not be encouraged after coming out of the bath. The patient should be clad according to the season of the year; and it is of great consequence to keep the feet comfortably warm and dry; in order to ensure this, worsted stockings are too frequently directed to be worn, which, in many individuals, will produce the very circumstance it is wished to avoid. It was a long time before I could discover the cause of this; and I believe I may now state confidently, that worsted stockings, worn by people whose feet perspire, will tend to produce coldness of the extremities. In such circumstances, I find the object is attained, if the patient wear an under stocking either of silk or thin cotton. Exercise in the open air is highly necessary as soon as the patient's strength will permit; if he ride on horseback, the feet should be additionally protected in cold weather by cloth boots, and he should never make use of horse exercise for two or three hours after a meal. By degrees, he may be allowed a small tea-cup full of chicken or beef tea; subsequently, he may eat part of the breast of a chicken or game to dinner, till he is able to return to ordinary fare. The physician, in severe cases, ought to insist on his patient keeping notes of his diet, particularly during his recovery, which will enable him to compare his present state of health with the articles he had eaten the day before. The best diluents he can use are, an infusion of camomile flowers and lemon-peel, and wine and water in small quantity. Stimulants are to be commenced with great caution, and not until the pain in the epigastric region and heat of skin are subdued; perhaps the best stimulant is cayenne pepper with food, which affects the whole bowels as well as the stomach, and tends to obviate constipation. Ginger tea will be found serviceable, together with a glass or two of good sound wine once or twice a-day. Wine sometimes, however, produces acidity, in which case a small quantity of brandy in water is found an agreeable substitute.

Dyspepsia is one of those diseases too generally treated by the routine practitioner, from its name, without reference to the pathological condition of the body on which the numerous symptoms depend. If such a practitioner were asked, what he would prescribe for a person who had dyspepsia? he would quickly reply, "*tonics!*" I have no objection to the medicines which are usually administered under the denomination of tonics, provided they are not given for the purpose of running up a bill, or prescribed at times when something better might be done for the patient. But I have some doubts respecting the truth of the received notion of their action, I do not think it is by giving tone to the stomach. These remedies are generally bitter, and, I imagine, produce increased secretion of the fluids connected with the digestive process. On putting a little quassia or gentian into the mouth, immediately a flow of saliva takes place, which continues as long as the taste is perceptible, and even afterwards, when the person thinks of the bitter taste. May not a similar action in other organs, follow the application of the same substance?

If the liver be not doing its duty properly, calomel, hydrargyrus cum Creta, or the blue pill, may be occasionally exhibited at bed-time, followed by a very small dose of salts in the morning; but it is a despicable practice to give blue pill in every disease connected with the digestive function. And it is much to be regretted, that the great name of Abernethy should ever have been associated with such insufferable quackery.

The above treatment is to be persevered in for a long time, changing the diet and the laxatives now and then, but continuing the contra-irritation and application of leeches alternately. After a time, cold bathing in the open sea may be cautiously tried; the shower bath, or sponging the body with vinegar and water, often produces the best effects.

Third Stage of Indigestion.—It is not necessary to give a description in this place of the symptoms in the third stage of indigestion, and the proper mode of treatment, because these must vary according to the organ diseased, as well as the nature and extent of the affection.

The disease termed dyspeptic phthisis by Dr Wilson Philip,

is only met with, generally speaking, in cases of long standing. My experience, however, leads me to state that bronchitis is the primary affection in such cases, the tubercles form subsequently, and only in subjects highly predisposed.

Flatulency and Tympanitis.—These are symptoms of dyspepsia, but require a few separate remarks, along with water-brash and heart-burn.

Some people suffer extremely from flatulency and acid eructations. Five or six instances have fallen within my observation, of individuals who frequently passed enormous quantities of flatus upwards; and it is presumed these are cases to which Dr Mason Good would apply the term *cholera flatulenta.* In all such instances, the patients had previously eaten some crude vegetable substance: generally, the ordinary salad mixture, or radishes. The remedies which seemed to afford the greatest relief were æther, aromatic spirit of hartshorn, warm brandy and water, or brandy by itself, and essence of peppermint.

Tympanitis may be detected by percussing the abdomen; it is often a troublesome symptom, not only in this affection, but in fever; and the best remedy which can be used is turpentine. It is better to try it, in the first place, by injection, in the proportion of a table spoonful to eight or ten ounces of thin gruel, which the patient is to retain as long as possible. If this plan do not succeed, half an ounce is to be given by the mouth, with the same quantity of castor oil.

Infants, during the first months, frequently suffer very much from flatus in the stomach and bowels, which will in general be found to depend on the pernicious and unnecessary custom of giving them castor oil and other medicines to open their bowels, and food they are unable to digest. In truth, the moment an infant is born, and often before it is dressed, castor oil is exhibited, which frequently produces griping; this is attributed to wind, and want of something to eat, therefore a quantity of gruel is then given, which often increases the child's sufferings; Dalby's carminative is at last exhibited, which affords temporary relief. Few infants can be expected to thrive well under such bad management. The usual remedies for flatulence in infancy are, dill water and oil of aniseed.

Pyrosis, or Water-Brash.—In some long standing cases of

indigestion, particularly in old people, in women more than men, and those who live principally upon farinaceous food, a considerable quantity of limpid fluid is discharged from the stomach by eructation. This is the affection which is called water-brash. It is a symptom of scirrhus of the stomach also.

It attacks the patient generally in the morning and forenoon: at first considerable complaint is made of pain in the pit of the stomach, faintness, a sense of tightness, as if the stomach were closely drawn up to the back bone, and the uneasiness is increased upon moving into the erect posture; at last the limpid fluid is discharged in considerable quantity at different times, when the pain subsides; sometimes the fluid has an acid taste, but in general it is stated to be insipid. Occasionally the discharge takes place without being preceded by any severe symptom. Laxatives and the oxide of bismuth, together with change of diet, are the best remedial agents in this complaint.

Heartburn is, next to flatulency, one of the most frequent symptoms in indigestion, and it is also one of the common attendants on pregnancy. When heartburn exists, the patient complains of a burning pain in the pit of the stomach; every kind of food creates acidity; and hot, acrid eructations take place, which seem to irritate the œsophagus. Some women suffer very much from this symptom during the whole course of pregnancy, but the moment delivery takes place, it generally vanishes like magic.

Henry's calcined magnesia, and careful attention to the diet, often mitigate this symptom. The carbonate of soda and potass are frequently used, and sometimes with benefit; as also, charcoal and chalk mixture. The remedy which will be found most successful in producing temporary relief, is the common extract of liquorice. Cases are now and then met with, which resist all these remedies, together with leeches and opiates. The oxide of bismuth, in doses of 15 or 20 grains, is often serviceable. Sulphate of iron, and sulphate of zinc, have been highly extolled. I have exhibited them often in such instances, but without benefit. The points to be chiefly attended to, are the regimen and laxatives.

GASTRODYNIA.

The stomach is liable to a neuralgic affection, which is known by this name, as well as by the term *Cardialgia*. Gastrodynia is closely connected with dyspepsia, often occurring as a symptom; but it may exist as the primary disease; sooner or later, however, the digestive powers suffer.

Symptoms.—Sometimes the appetite remains good; but in general it is impaired. There is a gnawing pain in the stomach, extending very deep to the back, accompanied by anxiety, sense of constriction, tendency to eructate or to vomit, with occasional faintness, sometimes headache and constipation, and the patient is occasionally relieved by eructation; a considerable quantity of limpid fluid is sometimes discharged; in fact, this affection is often complicated with pyrosis. After a severe attack, a patient sometimes escapes without another, for a week, a month, or even a longer period.

All the symptoms enumerated do not take place in every case; sometimes there being only pain and anxiety, with some nausea, which are increased after taking food. This affection is almost unknown before the age of puberty. Besides, depending on a diseased condition of the nerves of the stomach, it is probably occasioned by a diseased state of the pancreas, spleen, and liver. Sometimes it is produced by scirrhosities of the stomach and duodenum, and it is also a very troublesome attendant on gout. This disease has of late years excited a great deal of interest in France, as well as in this country; and although no additional light has been thrown upon the nature and seat of the disease, still very considerable practical advantages cannot fail to be derived from perusing the writings of M. Barras, and Dr James Johnson.

The chief causes of gastrodynia, generally speaking, are supposed to be, long-continued use of indigestible food, very hot or very cold drinks, dram-drinking, long fasting, worms. The chief articles which produce a paroxysm in an individual liable to the affection, are salads, and other crude, uncooked vegetable substances, cheese, sweat-meets, new bread, cherries, nuts, olives, and above all perhaps, roasted chesnuts. The

cure depends, therefore, upon avoiding such articles in future, together with fat, oils, and butter.

During an attack, a vomit will often suddenly check it, if exhibited within two or three hours after the offending matter has been eaten; hot flannels are to be applied to the epigastric region; gentle laxatives, and the warm bath, are to be employed, together with bitters, alkalies, magnesia; and in bad cases contra-irritation is to be persevered in for a considerable time. I have known one or two patients, who for many months at a time could not put any kind of food into the stomach, without previously taking a small dose of the sedative solution of opium; and we are told by Roche and Sanson, that in the worst form of this disease, which had resisted bleeding, bitters, and antispasmodics, Dr François found lactucarium successful. It is a curious fact, that although sweet things generally aggravate the complaint, the extract of liquorice frequently alleviates the pain considerably. M. Barras insists much upon the necessity of making the patient take animal food, although it may for the time increase his sufferings; but to this treatment I cannot subscribe my assent,—that kind of food is best for the patient, which occasions the least distress after it is taken into the stomach.

CHAP. IV.

DISCHARGES OF BLOOD FROM THE STOMACH AND BOWELS.

I. *Hæmorrhage from the Stomach.*—This form, which is termed Hæmatemesis, is sometimes occasioned by diseases of the liver and spleen, and takes place also occasionally in fevers; but these are not under consideration at present.

Hæmatemesis most frequently attacks women, particularly those who are unmarried, of a plethoric habit, and at times when there is an obstruction, or some other irregularity of the menstrual discharge, and who are constipated. Each attack is generally preceded by a rigor. Pure blood is seldom vomited, unless from external violence, or the erosion of the coats of a blood-vessel. This discharge rarely coagulates, and seems rather to be the product of passive hæmorrhage, or exudation from the minute vessels of the mucous membrane. It is supposed to be a very easy matter to distinguish this affection from those hæmorrhages which take place from the lungs. In hæmatemesis, it is said the discharge is preceded by a sense of weight, pain in the region of the stomach, and that it is unaccompanied by cough, &c. But these distinctions will not answer in practice, and it may be of great consequence to a medical man, that he should not give an assurance of safety, in a case which may prove fatal in a few minutes, as the following instances will shew. A child was attended by Dr Yates, when that excellent gentleman was a pupil at my Dispensary. It had been for some time complaining of cough and anomalous symptoms, which were relieved from time to time, and it was able at last to go to school as usual. Still

it occasionally discharged a little blood, and died suddenly after *vomiting* a considerable quantity. On dissection, the stomach was found filled with a coagulum, and there was also a considerable portion in the small intestines in a fluid state. It was evident that there had been active hæmorrhage, but after the most minute investigation, no blood-vessel could be found from which it had issued. The relations began to complain of the time we had been over the body, and at length became very impatient, so much so, that we were obliged to give up further examination; but the whole of the contents of the thorax, including the œsophagus and great vessels, having been carefully dissected out, were surreptitiously conveyed to my museum for minute inspection; and it was discovered that the blood found in the stomach and bowels, had proceeded from a ruptured artery in a cavern in the superior lobe of the left lung. A fistulous opening was found running upwards from this cavern, and communicated high up with the œsophagus; so that when ulceration produced a rupture of the vessel, the blood passed in this direction, and found its way into the stomach. The preparation is in my museum, together with an accurate and beautiful drawing by my friend Dr Alexander Thomson, an enthusiastic pathologist.

Another remarkable case occurred in the Dispensary practice, in an old man. He had enjoyed remarkably good health until lately, when his appetite became impaired, and he complained of dyspeptic symptoms, which gradually increased in severity, and he was at last reluctantly obliged to seek for medical advice, at the age of 72, for the first time, I believe, in his life. He complained of so much uneasiness in the region of the stomach, that he was cupped several times, and contra-irritation was produced over the part affected, with considerable relief. One morning he discharged a little blood, between the act of coughing and vomiting, and he soon died after passing a considerable quantity. Upon dissection, it was a subject of general remark, that the external appearance of his body, as to shape and plumpness, was more like that of a man half his age. Every internal organ appeared sound; but on cutting through the stomach into the duodenum, the pylorus was found thickened and indurated, and an ulcer about the size of

a horse-bean was discovered in the duodenum, on the surface of which the gaping mouth of a large artery was discovered, from which the hæmorrhage had taken place.

Treatment.—As the disease generally attacks plethoric individuals, and is seldom accompanied by debility or oppression, practitioners have no scruple in employing blood-letting during an attack, and it is frequently speedily successful in checking the discharge, by altering the determination of blood, and reducing the force of the circulation. Quietness, cold acid drinks, and a course of laxative medicines, are also essentially necessary. If the hæmorrhage recur after bleeding, or should it take place in a constitution already debilitated, the acetate of lead, either in solution or in the form of pill, in doses of two or three grains, and one of opium, every second or third hour, will be found serviceable.

II. *Hæmorrhage from the Bowels.*—This was formerly known by the term Hæmorrhoidal Flux, and it was believed by the ancients to be salutary; but now such a discharge is always regarded with anxiety, as it tends to undermine the constitution, and like other long-continued hæmorrhages leads to affections of the brain,—a remarkable and fatal instance of which lately fell under my observation.

When blood is discharged by stool, it will sometimes be found to proceed from an injury done to the verge of the anus by a hard and constipated stool, from a ruptured blood-vessel in the bowels, or from the diseased excrescences which are found at the termination of the rectum, known by the name of hæmorrhoids, vulgarly called piles. These have been divided into two kinds, external and internal, which last are also called blind piles. They may be said to be painful excrescences on the verge of the anus, or in the rectum, usually attended with a discharge of mucus or of blood.

The profession is not agreed as to their pathology; but after a careful examination of the opinions which have prevailed, and of the diseased parts themselves, I feel disposed to believe there are at least four distinct kinds of hæmorrhoids. 1*st*, They are sometimes nothing more than a varicose state of the hæmorrhoidal veins, with, perhaps, a slight thickening of the mucous membrane of the rectum itself. 2*d*, They are

formed by an effusion of blood in the sub-mucous tissue, which may either be subsequently absorbed, or become organised, with a slight thickening of the membrane. 3*d*, They are mere fungosities from the surface of the mucous membrane; and accordingly are found to vary very much in size, shape, and appearance. 4*th*, A prolapsed state of the mucous membrane of the rectum, which subsequently becomes indurated, and in a manner strangulated, by the contraction of the sphincter.

Symptoms.—Individuals who are thus afflicted, suffer only occasionally, and then it is said, in common language, they have "a fit of the piles." A sense of heat and fulness is felt in the rectum, attended with an occasional stinging pain, which is sometimes very severe and darting, increased when at stool, during which a quantity of blood is discharged, and a strong desire is experienced to sit and strain. After this has subsided, a sense of heat is felt for a few minutes. But when the piles are external, they often swell enormously; are very tender, however small they may be, and sometimes ulcerate. In this case the discharge may be constant, taking place, however, in small quantity at a time; on other occasions, there is copious hæmorrhage, followed by temporary relief from pain. When the inflammation runs high, induration of greater or less extent is left, in consequence, most probably, of effusion of lymph into the cellular membrane, to which strictures of the rectum may frequently be traced, and the formation of small hard tumours close to the verge of the anus.

Causes.—The injury done to the parts by the frequent passage of indurated feces; the use of aloetic purges; long continued exercise in the erect posture; sitting on a cold or damp seat; and every circumstance which impedes the flow of blood through the veins of the abdomen,—are causes of this complaint. The pressure of the gravid uterus, therefore, is sometimes a cause, as well as tumours affecting different parts of the uterine system, and diseases of the liver, &c. But it will be almost invariably observed, that individuals affected with piles, have been long and seriously afflicted with gastro-intestinal irritation.*

* The pernicious habit of taking a book or newspaper to read in the water-closet, when at stool, is not an uncommon cause of this unpleasant complaint.

Treatment.—The bowels must be kept constantly well regulated by the gentlest laxatives, carefully abstaining from the use of aloes in any shape. A large mucilaginous injection, exhibited immediately before going to stool, will be found highly serviceable, and the best way of preparing it is by making a decoction of linseed. Sulphur has been erroneously supposed to be a specific. Balsam of copaiva was recommended by Dr Cullen as an injection; but in the ordinary cases of blind piles, gentle laxatives, occasional injections of decoction of linseed, together with rest in the horizontal posture, and a moderately antiphlogistic regimen, will suffice. When the piles are external, tender, and inflamed, the application of leeches, or punctures made with a lancet, are often productive of great benefit, by diminishing the tension and pain. In severe cases, the recumbent posture is actually necessary, and I have seen the inflammation run so high, and attended with so much suffering, as to require general bleeding. Poultices and warm fomentations are very serviceable in alleviating the pain, and sometimes anodyne injections must be had recourse to; considerable relief is obtained, if the excrescence can be pushed within the sphincter. An ointment, made by mixing equal parts of powder of galls and opium in hog's lard, and a weak solution of nitrate of silver, are frequently beneficial.

If a great deal of blood be lost, whether at once or at different periods, a careful examination should be made with the eye, as well as the finger, in order to ascertain the exact point from which the bleeding proceeds, and it is necessary sometimes to apply caustic, a ligature, and even the knife; but these are matters of surgery. I would only further beg to insist upon the necessity of attending to the constitution more than is generally done in these cases, and particularly to the general condition of the mucous membranes; and young practitioners should bear in mind, that neglected cases of piles often terminate in fistula.

CHAP. V.

COMMON COLIC; PAINTER'S COLIC; ILEUS, INTUS-SUSCEPTION; INTESTINAL CONCRETIONS; PROLAPSUS ANI; AND CONSTRICTION OF THE RECTUM.

I.—COMMON COLIC may be produced, among other causes, by indigestible food, constipation, and a diseased condition of the biliary secretion.

Symptoms.—Griping pains and flatulent distention of the bowels, with a sense of twisting in the region of the navel, are felt, sometimes with contraction of the abdominal muscles; and occasionally, though rarely, with some degree of nausea and vomiting, which takes place more frequently, when the affection is produced by the biliary secretion, and in which case there is generally looseness of the bowels. Flatus is sometimes heard rumbling backwards and forwards in the bowels, which is more classically termed "Borborygmus." The pain comes on in paroxysms, during which the patient thinks he experiences relief by pressure applied to the abdomen, which in general distinguishes the affection from others of an inflammatory nature. But it must be recollected that cases of colic, when neglected, often terminate in inflammation of the bowels.

Treatment.—It is a most essential point to obtain free evacuations from the bowels speedily, particularly by means of an injection; certainly the best is composed of tobacco, in the proportion of half a drachm infused for ten or fifteen minutes

in eight or ten ounces of boiling water; to be strained, and exhibited when sufficiently cool. If the attack succeed immediately after a meal, an emetic may be given to dislodge the offending matter. Oil of cloves should be administered along with castor oil, or any other purgative; or oil of turpentine may be used by injection. Warm fomentations to the abdomen, or the general warm bath, may be employed.

Some cases of abdominal inflammation are attended by symptoms so slight as to resemble colic very closely, so much so, that in many instances it is difficult, and in some impossible, to determine this point of diagnosis.

In such circumstances, it will be well for our patients if we do not attempt to refine too nicely; if in doubt whether the case be one of inflammation or of colic, it is our duty to give the benefit of that doubt by using the lancet, particularly if the bowels are obstinate. The advantage of opium is very doubtful till the bowels have been properly moved, and the evacuation examined.

In a case of colic from vitiated bile, diluents, such as barley water, are to be employed, together with a weak solution of salts, and afterwards opiates. If the bowels be open, and we are perfectly satisfied that there is no danger of inflammation, a stimulant, such as brandy, is often beneficial.

Some women, at the menstrual periods, have griping pains in the bowels, more particularly in the course of the colon, accompanied by considerable distension of the abdomen, attended or not by constipation; frequently the pain extends from the caput cæcum to the arch of the colon. The best remedy in such cases, is a turpentine or assafœtida injection, combined with warm fomentations, proper regulation of the bowels and diet, and sometimes the warm hip-bath.

PAINTER'S COLIC.

This is also known by the names, Colica Pictonum, Devonshire Colic; and in the West Indies it is commonly called Dry Belly-ache.

This is the form of colic produced by the introduction of lead into the system, whether in food, by respiration, or cuti-

cular absorption. It is a disease which was long known and described before its cause was discovered. The discovery was made in Germany about one hundred and thirty years ago, by detecting publicans putting a preparation of lead into their wines. It is said that the disease used to prevail in Devonshire, and other places where cider is manufactured, in consequence of putting lead into the casks, to render the cider sweeter. The disease also prevails in the neighbourhood of smelting furnaces and lead mines; indeed, it is even said, in such situations, to affect the lower animals, such as poultry, pigs, &c. House painters, plumbers, potters, glaziers, and all who are compelled by their occupation to handle lead, are subject to this disease, particularly if they are not well guarded by personal cleanliness. Sir George Baker* was the first who drew the attention of the profession in this country to this interesting subject. It must be mentioned, however, that cases do occur displaying the same phenomena, course, and termination, which have been produced by exposure to cold and damp, when there could not be the most remote suspicion of the action of lead upon the system.

Symptoms.—The pain never leaves its principal seat about the umbilicus and pit of the stomach; at first it is dull and remitting, but gradually increases to be very severe and constant. The pain, in some severe cases, strikes through the back, and patients have told me that it resembled a stab through the body, others have felt as if they were cut in two at the umbilicus. In other cases, the pain extends to the arms and hands, down the back and pelvis, often affecting the lower extremities. The integuments of the abdomen feel retracted and hard, and I have seen the strongest men rolling and weeping like children. The whole surface sometimes suffers from pains, which the patients ascribe to rheumatism; there is always constipation, sometimes tenesmus, and occasionally sickness and vomiting. The sickness and vomiting are most se-

* Vide Papers in the 1st and 2d Vol. of the Trans. of the Lond. Coll. of Physicians.

vere at the height of the paroxysm; acrid mucus is sometimes vomited, or bile mixed with mucus, affording temporary relief. Hiccup sometimes supervenes, together with retraction of the testicles.

It is a matter which strikes every one with astonishment, that notwithstanding the violence of the symptoms, and the excruciating sufferings of the patient, the pulse is rarely much affected till the disease goes on for some time; in the end, however, it becomes quick and small. It has been remarked by some, that the feet and toes are occasionally affected, as in gout.

Spontaneous relief is said to follow a copious discharge of scybalous matter, like sheep's droppings, mixed with mucus and considerable quantities of blood. Occasionally, it is said, sweating produces a crisis. Sometimes the disease produces palsy of the superior extremities, and occasionally it terminates in death, which is preceded by a loss of sight and hearing, delirium, and convulsions. One attack leads to another; that is to say, a predisposition is left.

Colica Pictonum is a most afflicting disease to treat; for, do what we will, the patient is seldom relieved under a week, even when well managed, and relapses often take place at times when he is apparently doing well. He may be pronounced to be in great danger, however, when there are delirium, violent spasms, and convulsions.

Appearances on Dissection.—The following is an abstract of the appearances found on dissection, in the bodies of a number of individuals who died of this affection in the hospital of Beaujon, under the care of M. Renauldin. Redness, thickness, and ulceration of the mucous membrane of the alimentary canal, and often enlargement of the mesenteric glands, corresponding to the inflamed or ulcerated portions of this membrane. The redness varied from that of bright rose even to violet and brown; it was disposed in points, in streaks, and patches, and sometimes occupied an extent of several feet. The thickness was variable. The ulcerations were found almost always toward the termination of the small intestines, near the valve of the colon, which was sometimes destroyed; and in cases where diarrhœa prevailed, ulcerations were found in the colon;

and sometimes they were observed in the stomach. They were occasionally deep, and numerous; sometimes the stomach and intestines were perforated.*

Treatment.—The nature and seat of this disease are imperfectly known; but there can be no doubt, from the symptoms during life, and the appearances found on dissection, that it is probably seated, in the first instance, in the nervous system, and that we have to dread inflammation of the mucous membrane of the stomach and bowels. I can speak confidently, from experience, of the good effects of local bleeding by repeated cuppings and leechings on the abdomen and flanks. Many entertain an unaccountable dread of opening a vein in these cases, perhaps from prejudices of education; since I have seen the above account of the appearances on dissection, my objections to it are so far removed, that I shall hereafter try V. S. on proper occasions.

The remedies of the first importance, are calomel and opium, given in pills containing four or five grains of each, repeated at short intervals, so as to affect the system as speedily as possible. This remedial means has been strongly recommended by my friend Dr Musgrave, of the Island of Antigua.

One of the most severe cases of Colica Pictonum that ever fell under my care, occurred since the publication of the 1st edition. The patient was an apothecary's shop-man, aged 32, previous health good, and habits regular. The attack appeared to be owing to bathing the feet several times in a solution of acetate of lead, to suppress a fetid perspiration. In this case the paroxysms of pain were very distressing; the abdomen hard and distended; the features sharp and anxious, with hiccup and vomiting. The pulse did not exceed 80 till after V. S. had been twice repeated, and large doses of calomel and opium administered, when it rose to 110. V. S. produced no relief; tobacco injections, fomentations, &c. were used in vain. The symptoms, however, became much mitigated after the third large dose of calomel and opium, conjoined with croton

* Vide Roche and Sanson, vol. i. p. 528. These authors inform us that M. Renauldin had two hundred and seventy-five cases during the years 1821-22-23.

oil. He relapsed certainly, but was convalescent on the third day, and recovered progressively.

The bowels are extremely torpid in this disease, therefore common remedies must not be depended on; croton oil in doses of two, four, and six drops, must be given repeatedly at proper intervals, still continuing the calomel and opium. Turpentine is to be exhibited, both by the mouth and by injections. Large injections are to be administered; sometimes stimulating, at others unstimulating. Hot fomentations are to be applied; contra-irritation, when the disease is on the decline, which is to be for some time persevered in during the convalescence. The nitrate of silver has been strongly recommended in three, five, and six grain doses, in pill, three times a-day.* Dr Percival gave fifteen grains of the sulphate of alum every fourth, fifth, or sixth hour; and he assures us the third dose seldom failed to alleviate the pain.†

It is proper to mention, that Dr Reynolds has the credit of being the first who proved the powerful influence of opium over the morbid action produced in the system by lead.

ILEUS.

The attack comes on exactly like a common colic; vomiting takes place, which subsequently becomes incessant; sometimes even feculent matter is discharged by the mouth, and the abdomen is much distended. The symptoms vary much in intensity. Sometimes the pain is severe, amounting to *tormina;* at others it is slight. In some cases the febrile symptoms run high, in others there is no fever. In this case, and even in common colic, the abdomen should be minutely examined with the hand, to ascertain whether or not a hernia exists; for I have seen two or three instances where much valuable time was lost, in consequence of mistaking a case of hernia for colic.

Appearances on Dissection, and Pathological Remarks.— Considerable dilatation of one part of the intestine is generally

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* By Dr Robert, 5th Vol. Med. Trans.

† Vide 2d Vol. Ed. Med. Essays.

seen, while the continuous part is contracted; the parts above the contracted portion, are distended with fluid and flatus. Sometimes the intestine is of a livid colour, inflamed, and even mortified. At other times there are marks of peritoneal inflammation; and on some occasions, gangrene, without peritonitis.

In treating of the nature and seat of this disease in the 1st edition, opinions similar to those of Dr Abercrombie were advanced, viz. that the disease probably consists of "a paralysis of the muscular coat of a part of the intestinal tube, which leads to great dilatation; while the continuous portion of the bowel is contracted, which produces a temporary obstruction." "But, (it was added,) there is much ambiguity on this subject." Since that period I have thought frequently on the disease, and from an interesting conversation with Dr William Stokes of Dublin, one of the most ardent and accurate pathologists in this country, I have become convinced that Dr Abercrombie's views are erroneous.

In fatal cases of ileus, the bowel has been generally found in two opposite conditions,—one part contracted like a cord, and another part above much dilated. The point to be determined is, which of these is the primary seat of the affection? Dr Abercrombie thinks it is the dilated portion, and that "*the doctrine of spasm, as applied to this subject, must be admitted to be entirely gratuitous; and we must proceed upon facts, not upon hypothesis, if we would endeavour to throw any light upon this important pathological question.*"* In the last sentiment I most cordially agree; and as the author has substituted hypothesis for facts, I shall shortly state several reasons for dissent.

1*st*, Dr A. avers, that "*the collapsed state of the intestine, in which it assumes the form of a cord, appears to be the natural state of healthy intestine.*"* "*That in a case of ileus, the distended part is the real seat of the disease; and that the contracted part is not contracted by spasm, but is merely collapsed because it is empty, its muscular action being unimpaired.*" P. 136.

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* Researches on the Bowels, p. 134.

We submit, that the cord-like contraction is not the natural state of intestine. If it were the natural condition of parts, it would be always seen on dissection, when the bowels are unaffected by disease, whereas it is avowedly rare, and according to our observations, is only seen when the intestinal tube is in a morbid state. This appears to be satisfactorily proved by Andral, Billard, and others. We have examined the bowels of animals, opened during life, and on no occasion found the tube in the state which is asserted by Dr Abercrombie to be natural.

2*d*, It appears to us that Dr Abercrombie does not connect ileus with any known pathological state. He considers ileus to be a great and uniform distention of a part of the intestine, with loss of power of its muscular fibres. In short, he supposes the distended intestine to be in the state of paralysis, and that this is the primary disease. He states, also, that the "usual progress of the disease is into inflammation and its consequences," p. 138.

Dr Abercrombie cautiously avoids the term "paralysis;" but it must be admitted, that loss of muscular power proceeds either from paralysis, or inflammation in the part:—if paralysis, it is the opposite of the state of irritation, for nervation is abstracted, not added:—if inflammation, then Dr Abercrombie is wrong; but in neither case can he be correct.

It will be observed, also, that he does not denominate the cord-like state of the intestine "*contracted*," which he ought, but "*collapsed*," which term he ought not to have employed, because it conveys any thing but a correct notion of the actual state of parts.

3*d*, When we speak of a muscular organ such as the intestine, we must admit spasm to be possible, nay, probable; and we cannot therefore admit the doctrine of spasm, as applied to this subject, to be "*entirely gratuitous*." No one denies the muscularity of the intestines, and that they are capable of contraction, which implies an increase of nervation. If Dr Abercrombie's idea were correct, the bladder should never fill, nor the heart, nor the feces pass through the intestine, unless muscular fibre could be *stimulated to dilate*. But it will be proper to allow Dr Abercrombie to speak for himself: "If

we suppose then that a considerable tract of the canal is in a *collapsed* state, and that a mass of alimentary matter is propelled into it by the contraction of the parts above, the series of actions which will take place, will probably be the following: When a portion which we shall call No. 1, is propelling its contents into a portion of No. 2, the force exerted must be such, as both to propel these contents, and also to overcome the *tonic contraction* of No. 2. The portion No. 2, then contracts in its turn, and propels the matter into No. 3.; this into No. 4, and so on." P. 136.

It will be readily seen, on looking at the parts, that the empty intestine is not in a state of "*tonic contraction*," as Dr A. asserts, and that it offers no resistance to the alimentary mass, which is propelled onward by the contraction of the superior portion of intestine.

4*th*, If the dilated intestine usually passes into inflammation and gangrene, and its seat be in the muscular coat, its first stage must be one of irritation. The effect of irritation on muscular fibre is, to suddenly and powerfully contract it. The parts may become dilated afterwards, but the first effect will be contraction—and the contracted, of course, the diseased portion. It follows then, as a necessary consequence, that *if it be spasm*, the contracted is the diseased portion; or if, according to Dr Abercrombie, it be disease of the muscular fibre, still in the first instance the same will occur.

Ileus, according to Dr Abercrombie, is either a paralysis, or an irritation of the muscular fibres of the intestine, usually terminating in inflammation and gangrene. Could any two things be more opposite? If it be a paralysis, it is either general or local. It is not general, because all the symptoms are those of violently increased action, *colic, vomiting, spasms of the abdominal muscles, and paroxysms of tormina!* Tormina and loss of power together? If it be local, it is at all events accompanied by increased muscular action—spasm.

If the primary diseased action be connected with irritation, as we imagine, the first effect will be to contract the parts.

Lastly, It may be asked, does the treatment coincide with the doctrine of paralysis, or that of irritation and spasm? After describing the treatment, I shall return to consider this important question.

Treatment.—The chief attention must be directed to prevent and subdue inflammation, and to employ every means to move the bowels. For this purpose, the milder laxatives frequently repeated, assisted by tobacco injections, are to be had recourse to. If these fail, then we may entertain the question of bleeding, particularly if the case be not far advanced, and if there be pain on pressure. Leeches may be applied; but still we must not lose a moment in endeavouring to procure stools. Although we may mitigate the symptoms by bleeding and leeching, yet we may rest assured that a relapse will take place in the course of an hour or two, unless the bowels are relieved. Dashing cold water upon the belly has sometimes succeeded. When the gut is supposed to be obstructed, mercury in its pure metallic state has been recommended to be poured into the stomach in considerable quantity, in order to force a passage. Once I was present at a dissection, when the obstruction existed at about six inches from the termination of the rectum; and since then I have met with two cases of ileus, which were produced by constriction of long standing of the rectum; therefore I think, in all severe cases of this sort, that a long œsophagus tube should be introduced into the rectum, and if possible, pushed forward into the sigmoid flexure of the colon.

This is one of those diseases in which we frequently succeed in procuring passage from the bowels after bleeding, which had previously resisted the strongest purgatives; it is also one in which large opiates may be advantageously combined with laxatives. Opium generally acts by confining the bowels; but in the case now before us, it seems to increase rather than diminish the laxative effect of medicines. During recovery it may be adviseable to apply contra-irritation.

It has been already asked, if the most improved remedial means coincide with Dr Abercrombie's hypothesis? Bleeding, tobacco enemata, full doses of opium, and contra-irritants, to cure a disease which is a simple loss of the muscular power of a portion of the intestinal canal? The circumstance cannot be reconciled upon principles of pathology. Much real injury is done to the advancement of medical science, by the construction of such distorted theories; and I cannot resist

quoting a passage from the preface of Dr Abercrombie's work on the bowels, which bears on the present question. Speaking of the circumstances which have retarded the progress of medicine, he says, there are two errors committed—the one is the "*construction of hypothetical theories, or the assumption of principles which are altogether gratuitous and imaginary; the other is the deduction of general principles or conclusions from a limited number of facts.*" P. 8.

INTUS-SUSCEPTION.

Intus-susception, generally speaking, is a disease of infancy. There are the same symptoms as described in ileus, only that in many cases there is violent straining; the patient passing more or less bloody mucus with each effort, in some instances exactly resembling red currant jelly. This, like all other affections, varies very much in the symptoms as to violence; this was well proved in two fatal cases occurring in the same family, which fell under my immediate notice. They were both male infants at the breast; the disease ran its course in three days; but the symptoms were very violent in one case, and very slight in the other. In both, a tumour was felt in the left iliac region, at the termination of thirty-six hours, which gradually increased in size, till it became as large as an orange. Both children strained much at stool, and passed mucus tinged with blood. I have known the disease terminate fatally in thirty hours.

Appearances on Dissection.—We often find partial invaginations of the small intestines. I scarcely ever open a child without finding them; but they are not to be regarded as intus-susceptions, unless the coats are thickened, with marks of obstruction and inflammation. At least so I thought when the first edition was written. Since then, however, I have become doubtful on this point, having discovered ulcerations in the intestines at each intus-suscepted part in every case which I have had an opportunity of examining. In the dissections of patients who die of intus-susception, it is the caput cæcum, and a portion of the ileum, which are commonly forced up the ascending colon across the transverse colon, and some-

times down to the sigmoid flexure. In one of the cases to which I have alluded, the caput cæcum was found in the rectum, very near to the extremity of that gut. Could such a transposition have taken place unless there had been some original malformation? I think not. Upon first opening the abdomen, in both cases mentioned above, the intestines looked displaced and twisted in a strange manner, and the caput cæcum was missed from its usual position in the right iliac region.

On slitting open the intestine at the point of obstruction, we find two *mucous* surfaces highly inflamed, dark coloured and thickened, and covered with a considerable quantity of effusion of a red colour, intermixed with whitish matter like coagulable lymph. On laying open that part of the intestine which is invaginated, we then expose to view two *serous* surfaces, which are also found in a state of inflammation, with exudation of lymph and adhesion.

Treatment.—The same plan is to be had recourse to as in ileus, only this is altogether a more hopeless case; we are to be more guarded in using strong purgatives, lest we increase the torments of the poor little sufferers. It is said that a natural cure sometimes takes place by a spontaneous separation of the intus-suscepted portion of gut; and in every extensive collection, a preparation or two of this kind is exhibited.

INTESTINAL CONCRETIONS.

Some remarkable cases of this kind are on record; but man is not nearly so liable to the complaint as some of the lower animals. A case is published in the eighth volume of the Edinburgh Medical Communications, by Dr Fitzgerald. The patient, a lady, suffered extreme pain in the hypogastric region, the back, and os sacrum, for eighteen months; during the last three of which she could not leave her bed, except to be put into the hot bath, which afforded only temporary relief. One day, after receiving an injection, a large, hard, calcareous ball, of an oval figure, was discharged. It exceeded in size an ordinary orange, and was so solid, that it required the stroke of a hammer to break it. It weighed eight ounces and three drachms.

Sometimes there are several of these concretions; in that

case, they may be heard rattling upon percussing the abdomen. Many curious instances of this affection are related in the Philosophical Transactions. The late Dr Marcet wrote an essay on the chemical history and medical treatment of calculous disorders, wherein notice is also taken of several interesting cases, to which, as well as to the first volume of Good's Study of Medicine, I must refer the reader.

It is alleged that the inordinate use of chalk and of magnesia in dyspeptic and calculous complaints, leads to the formation of these substances. Mason Good mentions a case of a lady whom he had once attended; she "laboured under a most painful constipation, till a large mass of what may be called intestinal mortar, was removed by a scoop from the rectum." P. 297, vol. 1st.

Treatment.—If the nature of the disease be discovered, large mucilaginous injections ought to be frequently administered, alternately with those of an anodyne nature, to allay irritation. Blisters and leeches may sometimes be necessary, to allay internal pain, and moderate any inflammation that may arise. If such substances can be felt through the parietes of the abdomen, as is alleged, it may perhaps be possible to push them on, daily, in the course of the bowel towards the rectum. In females, I can conceive it to be very easy to break them down when they arrive in the rectum; and considerable assistance will be afforded by introducing one or two fingers into the vagina. The warm bath is not to be neglected.

PROLAPSUS ANI.

By this term is understood the protrusion of a portion of the mucous membrane of the rectum, the sphincter contracting forcibly, and producing a temporary stricture. *Prolapsus ani* depends either upon a temporary want of power on the part of the sphincter ani, or some violent irritation in the rectum, producing great straining, which, in medical language, is termed tenesmus, during which the mucous membrane is protruded. It is now much more rare than formerly, owing to greater attention paid to the bowels of children, who are generally the subjects of this complaint. Formerly a pernicious custom prevailed of endeavouring to produce a stool, by making

children sit upon a pot containing a little boiling water, instead of giving them physic.

Symptoms.—The protrusion takes place when the child is bearing down at stool, or making water; it begins to cry most violently, from pain in the part affected, and the protrusion takes place. On making an examination, the mucous membrane is found of a dark red colour; the protruded portion is of various sizes, sometimes as large as a small orange. Formerly a piece of scarlet cloth was applied to the part by the women, under the idea that it would be thus reduced; but now almost every nurse knows how it should be reduced. The child being placed on the back, gentle pressure is to be applied to the protruded portion of gut, by the thumbs of the operator, which have been previously dipped in oil.

People advanced in age are sometimes affected with prolapsus ani; it frequently depends upon diseases of the urinary organs, as well as of the bowels. The parts are occasionally so much relaxed as to require the use of a bougie, and sometimes of a bandage; or a more serious and painful surgical operation is necessary.

CONSTRICTION OF THE RECTUM.

Little need be said respecting constriction of the rectum in a work on the practice of physic; indeed, it is introduced only for the purpose of drawing the attention of physicians to the subject. I have seen several cases within these few years, in which many dangerous attacks of constipation might have been avoided, had the disease in the rectum been early discovered. This affection may be suspected in every case of habitual constipation, particularly in those instances where the patients have to strain long at stool before the least passage can be procured, which is followed by pain in the part, and frequent attacks of piles. Laxative medicines afford only temporary relief, and when too powerful, I have seen symptoms of ileus induced. The only remedy is to be found in the frequent introduction of the bougie. I have been lately consulted in two instances where symptoms of ileus were occasioned by this affection; both patients were permanently cured by dilating the stricture.

CHAP. VI.

INTESTINAL WORMS.

THERE are principally three kinds of Worms which infest the intestinal tube,—the Lumbricus, Tenia, and Oxyuris.*

1*st*, *Lumbricus*. It resembles the common earth-worm, and may exist in considerable numbers; instances are on record of upwards of fifty having been voided. Lumbrici lodge in the small intestines, and occasionally in the stomach, and are therefore frequently vomited. They often excite little uneasiness, but in some cases they create griping and considerable constitutional suffering.

2*d*, *Tenia, or Tape Worm*. Of this genus there are two species, the tenia solium, and tenia vulgaris. The first, as its name imports, is solitary; the second may exist in families. They generally take up their quarters in the higher parts of the intestines; for the purpose, as is supposed, of feeding on the chyle. Tape worms appear to be composed of a great number of pieces or animals joined together by articulations. In the tenia solium these articulations are long and narrow;

* There is another kind of worm occasionally met with, the Trichuris; but of which I shall not treat, being more an object for the natural historian. Another species, never before described, has been lately discovered in my collection, by Captain Brown, an ingenious naturalist, and described as the Oxyuris Angulata in an excellent little work on Worms, by William Rhind, Esq. surgeon.

while in the other kind they are short and broad. The solitary tape worm has been known to measure between thirty and forty feet; and one extraordinary worm is mentioned by Dr Sibbargaarde of Copenhagen, which measured thirty-eight yards. The tenia vulgaris measures generally from three to twelve feet.

3*d*, *The Oxyuris* generally lodges in the rectum, enveloped in mucus; it is the smallest, being only like threads, from an eighth to a quarter and half an inch in length.

Worms chiefly exist in children and sickly adults, and are generally attributed to some diseased condition of the secretions in the alimentary canal. I believe the inhabitants of Great Britain suffer less from them than those of any other nation. Mr Marshall, Deputy Inspector-General of Hospitals, informs me that Europeans are very liable to lumbrici in India, and perhaps Africans are more so. Few *post mortem* examinations are made without discovering them. One negro passed forty lumbrici in one day; in seven days he passed altogether two hundred.

It is an interesting point to determine, whether worms are produced in the intestinal tube itself, or are generated from ova or animalcules accidentally swallowed with the ingesta. Various opinions have been maintained in support of each view. A case, however, occurred in the Session 1834–5, in the Veterinary School of Edinburgh, that convinced my mind of the truth of the former theory. A horse having died rather suddenly, was minutely examined by Mr Dick and his pupils, to discover the cause of death. Several small slender red worms, (the *Strongylus Armatus*,) were discovered in the intestinal tube. On examining the mucous membrane, the distinct follicles were observed to be very numerous, large, and elevated. On the surface of some of them, a dark-coloured spot was seen, which on close examination was found to be a hole, communicating with the interior of the follicles; in others it was wanting. Incisions were cautiously made, to expose the contents of the follicles that were without the opening, in each of which a small red worm, the *Strongylus Armatus*, was found, coiled up like a snake in its egg; the others were empty, but retained the impression made by their

late occupants, and a circular hole in the centre through which they had made their escape.

Worms frequently produce emaciation, swelled and tense abdomen, gnawing and slight burning pain in the stomach and bowels; irregular appetite; a pale, sickly countenance; foul tongue; fetid breath; irritation and inflammation of the nostrils, occasioning great itching and desire to pick the nose; occasional feverishness, particularly at night, producing restlessness and want of sleep. But none of these symptoms, nor all of them conjoined, point out the positive existence of worms, because they may be produced by any irritation or sub-acute inflammation in the mucous membrane; and it is too much the custom for medical men to conclude that a child has worms, if it be dull, look pale, and is observed with its fingers frequently in the nose. Besides these symptoms, worms occasionally produce violent colicky affections, with vomiting and purging, sometimes of blood; and I believe ulceration of the bowels, and even peritonitis, may be excited by this irritation. More rarely, cerebral symptoms, and even epileptic convulsions, take place. Children who are troubled with worms, often awake suddenly, screaming; and frequently are observed to grind their teeth.

Treatment.—The first thing to be done, is to endeavour to repair the digestive function, and at the same time, we must institute an exterminating war against such filthy intruders, by means of a class of medicines called anthelmintics. It is curious, however, that the remedy which appears to succeed in one or two cases, will disappoint our expectations in a number of others. Anthelmintics naturally divide themselves into two classes; one which operates mechanically, namely, ordinary purgatives, common oils, sulphur, sea-salt, tin-filings, cowhage; another, which has a peculiar poisonous effect on the animal, as oil of turpentine, hellebore, male fern, tobacco, rue; calomel, and other mercurial preparations. Of all these, oil of turpentine, calomel, jalap, and the cowhage, have been most successful. It deserves to be mentioned, that turpentine, in doses of from one to two ounces, is the only remedy which has hitherto been found generally successful in destroying the tenia. It has been mentioned to me, however, that a

decoction of the root of the pomegranate tree, is fully as successful. When turpentine is given by the mouth, care should be taken to have the bowels previously well opened, so that it may not be detained in the intestines. The condition of the stools must be watched, which, together with other symptoms, treated of under the head, "Usual Complaints of Children," will generally announce whether there be any considerable irritation or inflammation in the mucous membrane. Should such symptoms exist, the application of leeches, or of a contra-irritant, may be necessary.

CHAP. VII.

INFLAMMATORY AFFECTIONS OF THE ORGANS CONTAINED WITHIN THE CAVITY OF THE ABDOMEN.

GENERAL REMARKS.

Inflammations of the viscera have been distinguished, since the time of Boerhaave, by anatomical terms, derived from the name of the tissue or organ affected, with the addition of the Greek term, *itis;* as Gastritis, Enteritis, Peritonitis, Arachnitis, &c.

It would be an error to suppose that in inflammatory disorders, the constitution is always disturbed in proportion to the importance of the part affected, and the nature and extent of the diseased action. If the organ be a vital one, the disease is certainly attended with more danger, than if the inflammation attacked an ordinary muscle, or the cellular substance to the same extent; and the disease is much more rapid in its progress; but there is often more pain and a higher degree of fever when the inflammation is situated in the latter tissues, than in the brain, lungs, &c.

The constitutional suffering which happens when vital organs are affected with inflammation, is attempted to be explained by the term sympathy; it is said in medical language, "the organs sympathize with each other." Thus, Dr Good observes at page 384, vol. II. "When inflammation is seated in the heart, its action becomes extremely agitated and irre-

gular. When in the lungs, the heart, *possibly from sympathy*, does not seem to allow a free diastole."

It would afford me much real satisfaction, if the word sympathy were always employed in medical writings in a strict pathological sense, as I conceive it would be a great step gained in the practice of medicine. It is one of those vague terms too often employed to express a great deal more than we actually know, but which explains nothing; and I have frequently seen it highly injurious in practice,—thus, in inflammation of the stomach and bowels, I have seen the most deadly cerebral symptoms lighted up, which were not treated, because it was supposed the brain was only *sympathizing*, not really diseased. I have seen the same thing happen in fevers, gout, rheumatism, &c. The word sympathy means, strictly speaking, fellow feeling or suffering, and so far the expression is correct, because, as has already been explained in a former part of this work, diminished action in one organ leads to increased action in another, and any thing going wrong with one important function, embarrasses all the others. Here it will be remarked, that the organs secondarily affected are diseased, in as much as they are supplied with too little, or with too much blood; or, if the organ affected be excretory, something deleterious is retained in the blood, which poisons to a certain extent the stream of life, producing embarrassment in all other organs, although one may shew it more than another. Now all this shews fellow-suffering,—a tendency which one organ has to sympathize with another. It is to be lamented, however, that this expression is too often used in medicine, in the same sense in which it is employed in common conversation.

When inflammation is seated in the lungs, the heart actually does suffer, from two causes; first, because the function of respiration is impeded, and the changes produced on the blood in the lungs are not properly effected; and secondly, because the circulation through the lungs is obstructed. This is certainly accounting for the affection of the heart, better than by stating that it is "*possibly from sympathy.*" The same thing happens to the lungs, when the heart is primarily affected; there is dyspnœa and cough, not from sympathy in its

ordinary acceptation, but from an increased or diminished supply of arterial blood; and also, by obstruction in the circulation. It may be thought by some, that this statement is quite unnecessary; but it is made under a strong sense of its importance, as I have often had to witness the baneful effects of the term in actual practice.

There is another term, which those who are young in the profession must be cautious in receiving,—it is the word "debility." It has already been shewn, that oppression and obstructed action are generally confounded with debility; and I shall take the liberty to make a few remarks with respect to this term, as applied to the system when labouring under inflammation.

Dr Mason Good, in noticing inflammation of vital organs, observes at the page last quoted, "The *debility* commences early, because the inflammation itself is immediately interfering with the actions essential to life." The term debility is usually employed in such cases to denote oppression, prostration of strength, inability to perform loco-motion; but if the inflammation be quickly removed from any organ by bold measures, the oppression ceases to be felt, and the strength is restored by remedies decidedly debilitating. This must ever be kept in recollection in treating inflammations in the first and second stages; otherwise, the term will be apt to induce young practitioners to follow the fashionable practice of giving bark, wine, and animal food, in cases in which they ought to bleed.

It must be recollected that inflammations are not always acute: perhaps they occur more frequently in a sub-acute or chronic form.

The term "*acute inflammation*," is employed to express the highest degree of this diseased action, which arises suddenly, advances through its course with rapidity, and if not properly treated, terminates in a few days, by altering the structure of the part affected so much, as to render it incapable of supporting life.

The term "*sub-acute inflammation*," is employed to denote a milder degree of inflammation than the former; it arises more insidiously, is less severe, and, if left to itself, does not

destroy the structure of the part affected till the second or third week.

In both these cases, we have the combination of symptoms denominated fever, which is higher, generally speaking, in the former than in the latter.

The term "*chronic inflammation*," is employed to express a diseased state which follows an acute inflammation that has been partly subdued, as we see sometimes in the tunica conjunctiva of the eye. This term is likewise used to signify an inflammation which begins and advances slowly and irregularly. The patient passes restless nights, with thirst, and a dry burning sensation of the hands and feet, while in the course of the day the extremities can scarcely be kept in comfortable heat; although he is always complaining, yet there is no severe general commotion during the day: he is able to sit up, to take exercise, and even for some time to go through his ordinary duties. His restless nights are too generally attributed to indigestion, proceeding from something which he has eaten or drank,—to an irregular state of the bowels,—want of exercise, or to something which had affected his mind; when perhaps the substance of the brain itself is undergoing slow destruction. In such cases, the common routine practitioner will be found prescribing his tonics, diaphoretics, diuretics, or blue pill, always treating some symptom, the actual disease being hid by an impenetrable cloud from his senses. At length the structure of the part becomes more and more destroyed, till all the symptoms called hectic are fairly established, or the patient becomes comatose.

These observations naturally lead me to notice other points in pathology. It is surprising to find how completely a vital organ may be altered in structure, without producing external signs or symptoms of corresponding violence, provided the diseased action has gone on very slowly. Another circumstance to be attended to is, that one individual, from peculiarity of constitution, will be destroyed by the tenth part of an organic lesion, which a great many others may survive for years, never certainly being entirely well, but able to transact their ordinary business.

The consideration of these circumstances, ought to induce

us, in our treatment of diseases, to go on steadily, guided as far as possible by the pathological condition of the body, at the time, without reference to accidental symptoms.

When treating of the congestive form of fevers, it was mentioned that inflammatory action might go on concealed under severe congestions. The same observations are equally applicable to purely inflammatory diseases.

ENTERITIC INFLAMMATIONS.

Under this title I shall treat, 1*st*, of Peritonitis. 2*d*, Of inflammation of the mucous membrane of the stomach. 3*d*, Of inflammation of the mucous membrane of the bowels, which will include diarrhœa, the bowel complaints of children, tabes mesenterica, dysentery, and cholera. 4*th*, Inflammation of the muscular and cellular tissues. 5*th*, Scirrhus of the stomach and intestines.

PERITONITIS.

I shall, in the *first* place, treat of inflammation of the peritoneum in the ordinary state of the system; 2*d*, peritonitis after delivery; 3*d*, a modification of peritonitis after delivery, the consequences of inflammation of the substance of the uterus, or of the uterine vessels and absorbents; and *lastly*, of the chronic form of the disease.

Cullen, by dividing peritonitis into three varieties, has been guilty of a great error, because no one can tell whether it is the peritoneum lining the cavity of the abdomen, or that covering the bowels, omentum, or mesentery, which is inflamed. Although he insists much on the propriety of this division, yet he observes, "it is not proposed, however, to treat of them here, because it is very difficult to say by what means they are always to be known; and further, because when known, they do not require any remedies besides those of inflammation in general.

Although peritonitis may take place most extensively, even to a fatal termination, without affecting the subjacent tissues, yet it is rare to see a case of inflammation of the muscular coat of the intestines terminate fatally, without finding the peritoneum more or less inflamed also.

Symptoms.—Like other acute affections, peritonitis commences with a rigor or chilliness, followed by re-action; occasionally, however, as in other diseases, peritonitis makes its approach in the most insidious manner.

The pain differs very much in its extent and severity, being sometimes so slight as scarcely to be complained of throughout the whole course of the disease; in others, so severe that the patient is unable to cough or to turn himself, and he complains even of the weight of the bed-clothes. The pain is commonly described as being acute tenderness rather than pain; it is sometimes so confined in extent, that the tips of the fingers can cover the part affected. The uneasiness sometimes commences in one part of the abdomen, sometimes in another. Generally it is first felt in one of the hypogastric regions; it does not, however, continue fixed and confined to one spot, but frequently spreads quickly over the whole abdomen. Before death, all uneasiness sometimes suddenly subsides, which is apt to impose upon the inexperienced; but the pain on other occasions continues to the last, and this is produced, I apprehend, by the extension of the inflammation. Tumefaction and tension of the abdomen occur early; in the first stage, it is produced by tympanitis, but late in the disease, the effusion produces distension. The pulse is not to be depended upon, as it varies much in different cases; sometimes it is full, strong, and quick, beating 120 or 130 in the minute, at other times it is strong and slow, sometimes weak and quick, and very often it beats at the natural standard; but towards the fatal termination it becomes rapid, weak, and intermitting. Vomiting is only an occasional symptom in peritonitis. The bowels are in general easily moved, drastic medicines are therefore not necessary. Thirst is a very general symptom in the pure inflammatory disease, but when the system is much oppressed by congestion, it is not urgent. The tongue is at first moist, and loaded with a white fur, but soon becomes dry and brown

in the centre, and frequently it is observed to be very red at the tip and edges. The breathing is soon affected, if the inflammation be extensive, from the pain which the motion of the diaphragm produces upon the tender peritoneum, as well as from the disordered state of the circulation. In the latter stage, however, the breathing becomes laborious, not only from the extensive effusion in the belly, and the increased disorder in the circulation, but frequently also from the pleura partaking of the inflammation. The brain, in most cases of acute and deadly inflammations of other parts, can scarcely escape embarrassment in its functions; therefore, we have almost always headache, if minute inquiry be made, and frequently delirium. When the peritoneal coat of the stomach is inflamed, the symptoms appear to be much more violent than when the disease affects any other part; the pain is more severe, the vomiting incessant and intractable; the features collapsed; the pulse small, and the powers of life sink rapidly;—this description will be found to correspond to that of the Gastritis of authors.

Causes.—Cold and fatigue, which occasion partial determinations of blood, and an irregular state of bowels, sometimes produce this disease, as well as contusions and wounds; sometimes it follows surgical operations.

Pathology.—Until lately this was not understood. Cullen was unacquainted with it, and so was Dr Gregory, I believe, to the latest period of his life. Many people of the present day, cannot fancy how it comes to pass that there is so much effusion with so little vascularity, but there is now no doubt that the effusion is produced by inflammation of the peritoneum itself.

In addition to the observations already made on the effects of inflammation on serous membranes, at page 21, &c. of this work, and those which will also be found at page 275, I may now remark, that the absence of vascularity is no proof of the non-existence of inflammation; pathologists rather trust to the well-known results of that action, which have also been established by experiment. Peritonitis was produced in dogs, which were then killed, and the vascularity, if recent, disappeared in the act of dying.*

* Vide Archives Genérales for December 1823, and January 1824.

Treatment.—Bleeding, both general and topical, is to be had recourse to; in very slight cases we may trust to local bleeding by leeches, but when the inflammation is severe, the lancet should be used to such an extent as the nature of the case demands, so as to make a decided impression upon the disease and upon the system. Some physicians are, I believe, still in the habit of ordering the precise quantity of twelve or sixteen ounces of blood to be drawn in all cases, whether the disease be slight or severe; the patient robust or weakly; at the beginning of the disease, as well as at any time during its progress. In all cases, the operator should be left to his own judgment as to the quantity, because he alone can judge of the effects, unless the physician chooses to attend himself. More than two or three hours should not elapse between the bleeding and the next visit, when it may be determined whether the operation ought to be repeated, or leeches applied. Perhaps it may not be found necessary to have recourse to either the one or the other, but we are nevertheless still to be on the watch. Laxatives are to be frequently repeated, assisted by large unstimulating tepid injections. There is no necessity in this disease for giving drastic purgatives, because the bowels are in general not difficult to move; and if they should be found obstinate, two grains of calomel, and six of rhubarb, repeated every three hours, will produce more satisfactory stools, with less danger of producing irritation, than five grains of calomel and a scruple of jalap. As soon as the bowels are opened, an opiate may be given if there be any restlessness. Fomentations with very hot cloths are often serviceable in mitigating the pain, but it is not yet decided whether they are more or less beneficial than cold applications. Blisters are not to be had recourse to till late in the disease; and when they are thought necessary in serious cases, the abdomen should be completely covered.

Many practitioners have great faith in digitalis in such cases, as a contra-stimulant, in doses of ten, fifteen, or twenty drops of the tincture, repeated four or six times in the twenty-four hours; but although I have seen it tried in many cases of peritonitis, it has never operated beneficially, and in such an acute disease, no confidence can be placed in any

remedy which requires that we should wait twenty or thirty hours for its effects in controlling the circulation. If a remedy of this class be wanted, we possess a far better one in antimony; and better still, in acute affections of the bowels, in tobacco, which is to be administered by injection.

If the patient be affected with distension of the abdomen from tympanitis, we have an admirable remedy in turpentine by injection, in the proportion of half an ounce, or an ounce, in eight or ten ounces of gruel, or it may be put into the tobacco injection. The regimen is to be strictly antiphlogistic.

PUERPERAL PERITONITIS, VULGARLY CALLED PUERPERAL FEVER.

The nature of this disease is inflammation, and its seat the peritoneum, so that it is exactly the same as the last affection treated of, but modified by the peculiar condition of the woman, and the nature of the prevailing epidemic.

Symptoms.—There are two varieties of puerperal peritonitis, the purely inflammatory and the congestive; and I shall hereafter explain the reasons why the latter more frequently occurs in the puerperal state, than in the ordinary condition of the system.

It is not necessary that I should enter into a detail of all the symptoms, because they are the same as those already described in common peritonitis. It will be sufficient to notice some of the peculiar symptoms which Dr James Hamilton, Jun. and other symptomatical physicians, call "*pathognomonic*," or, in other language, symptoms which are present only when the disease is present, and absent when the disease does not exist. These are pain in the belly, the state of the pulse, tympanitic distension of the abdomen, pain in the forehead, and the condition of the discharge which takes place after delivery, called the lochial discharge.

Mr Burns, as well as Dr James Hamilton, Jun. has endeavoured to make it appear, that in peritonitis the pain is very severe; whereas in what they choose to call puerperal fever, the pain in the belly is slight, or, to use the words of Mr Burns, "abdominal pain is not the most prominent symptom." Dr Hamilton is exceedingly angry at a statement made by me in

my work on "Puerperal Fever," that in his cases the pain in the belly was very acute, which he has been at much pains to deny in a letter printed in a celebrated pamphlet, which it has since been necessary to suppress; but that the Doctor has been guilty of a subterfuge not very creditable to him, is easily proved, by looking back at his own account of the symptoms of the disease, in the old editions of his work. In the edition 1813, page 202, will be found the following passage: "In many cases the pain in the belly is such, that the weight of the bed-clothes proves intolerable." But even allowing that the pain is often sub-acute, and not much complained of as a prominent symptom, it is no more than we frequently meet with in peritonitis in the ordinary state of the system. Dr Abercrombie, in giving an account of the pain in common peritonitis, says, "and in some cases, it is little complained of, except when pressure is applied, being rather acute tenderness than actual pain."*

Much stress is laid upon the pulse, by these gentlemen, in the form of the disease under consideration. They try to make it appear, that in common peritonitis it is always "frequent, small, and sharp," whereas in this disease it is fuller, but soon becomes feeble. Another short quotation from Dr Abercrombie's paper, will shew the absurdity of this distinction. "The pulse (says he) is frequently little affected, especially in the early stages. It may be from 80 to 90, or 96, but is sometimes scarcely above the natural standard."

Early tumefaction of the abdomen is supposed to be peculiar to puerperal peritonitis; but as no professional man, who has been in the habit of treating inflammation in the abdomen, whose opinion is of any value, will again hazard such an assertion, I shall pass it over without further notice, as also the pain in the forehead.

Lochial Discharge.—All the authors who have written upon this subject, including Mr Burns himself, state that the lochial discharge is variable,—that it sometimes flows as in ordinary cases, in some it is diminished, and in others suppressed. Dr James Hamilton jun. maintains that it never ceases in the true

* Edinburgh Medical and Surgical Journal, Vol. XVI.

puerperal fever; and that it is "*one striking mark of distinction between diseases which resemble each other in the prominent characters of fever and pain in the belly.*" Thus endeavouring to draw pathological distinctions from one symptom, confounding, as is his usual custom, cause and effect.

Diarrhœa sometimes occurs in the course of this disease, and is always to be regarded with anxiety. If the secretion of milk have taken place, it almost always recedes, and the breasts become flaccid; but the disease generally makes its attack before the secretion of milk commences, in which case it does not appear till two or three days after convalescence takes place.

Appearances on Dissection.—Dr Abercrombie's account of the appearances found in peritonitis, occurring in the ordinary state of the system, is as follows: "On dissection we find uniformly effusion of coagulable lymph, in some cases very extensive; and frequently effusion of a turbid or puriform fluid, sometimes in considerable quantity. Gangrene is rare, and as far as my observation extends, never occurs as the prominent appearance, it being, when it does occur, slight and partial, and always accompanied by extensive deposition of coagulable lymph."*

The following statement of the appearances found in the cases which were treated by Dr James Hamilton jun. in the Lying-in Hospital, was published in the inaugural dissertation of his pupil Dr Torrance, and acknowledged by Dr Hamilton to be correct.

"We found (says Dr Torrance) appearances similar to those observed by Hulme and Leake in the London hospitals. On examining the abdomen, fetid gas sometimes issued from it. A fluid was always found in the cavity of the peritoneum. When the effusion was in small quantity it resembled milk, and *joined the intestines together like glue;* but when in large quantity, it had the appearance of whey, and the adhesions were not so strong. We found small whitish portions of this matter in the folds of the intestines, which, when stirred, gave an appearance of milk to the effused fluid. The perito-

* Edinburgh Medical and Surgical Journal, Vol. XVI.

neal coat of the intestines had lost its usual pellucid appearance, felt hard, and ramifications of red vessels were conspicuous. These traces of inflammation, however, were not such as they should have been merely from an effusion of fluid into the abdomen. The peritoneal coat of the stomach seemed always sound. The muscular and cellular coats of the intestines were sometimes affected by an effusion between them. The villous coat was almost always natural. About four or five pounds of a fluid resembling coffee, was found in one or other of those affected.

"The omentum in some cases firmly adhered to the intestines, and its substance was so much affected, that it was torn in many places before it could be separated from them; but it never seemed mortified, nor was it dissolved into a purulent matter, as Leake and Hulme say they have seen it. The internal surface of the uterus was sound, and never affected with inflammation. Suppuration of the ovaria was sometimes manifest. In two or three cases, it seemed that the pleura had been involved in the inflammation, viz. by effusion, and other signs sufficiently marked."

Pathological Remarks.—1*st*, The peritoneum is the tissue affected by inflammation in this disease, which extends itself throughout the whole extent of the membrane, without attacking one portion more than another, except that part of the peritoneum which forms the broad ligaments, in which situation, it is probable, the disease first commences. Nevertheless the inflammation does not always appear to be general, the traces of its existence being sometimes confined to particular spots.

2*d*, The effused fluid found in the abdomen of women who have died of peritonitis, has nothing peculiar in it; it resembles a similar effusion found in peritonitis in men, and in the thorax of those who die of pleuritis. It varies in consistence and colour in all these cases, but it is generally a white or reddish serous fluid, containing flakes of albumen, more or less abundant, according to the intensity of the disease; and sometimes it has a puriform appearance.

3*d*, The substance of the uterus has rarely been found diseased, in this country at least, in any other degree than

being sometimes large, flabby, and tender. But we have accounts of fatal epidemics on the continent, more particularly of one which occurred in Paris in 1829, in which not only the uterus, but the venous and lymphatic systems, suffered much.*

4th, If a patient die in the early stage of peritonitis, we may find little vascularity, particularly if much blood have been drawn, although we are certain, from the previous symptoms, that inflammation had existed. If the patient survive longer, however, then we shall see the sero-purulent effusion. If the patient live still longer, the quantity of effusion is increased, and masses of coagulable lymph will be found glueing the intestines very slightly together. If the patient live still longer, the intestines will be matted together, and false membrane will sometimes be found covering the liver, spleen, and uterus, and the peritoneum itself will then be seen very vascular, and much thickened.

5th, The pleura is frequently found inflamed in this disease, as indicated by a similar sero-purulent effusion; and there is sometimes evidence of inflammation in the brain.

6th, This disease is more rapid in its course, and fatal in its termination, than ordinary peritonitis, from the peculiar condition in which a woman is left after parturition. In the *first* place, there has been an increasing determination of blood towards the uterine region during the previous nine months; and in the *second* place, an increase of nervous irritability. So that the balance of the circulation is left at this period in a very disordered condition, being readily upset upon the application of any of the usual causes; and when upset, the blood naturally takes its course towards the abdomen.

These are at least some of the reasons for the venous congestion which takes place in many cases, in a greater or less degree, particularly in women who have been worn out by breeding, or who have been debilitated by previous disease, or insufficient food and clothing. In these cases, the heart and other vital organs are so much oppressed, that they cannot create re-action, or the system is too weak to do so. In

* Vide Archives Generales for March and April 1830. The Author has been induced to give a sketch of these forms of (what may be called) Puerperal Fever, at page 283.

one set of cases, speedy death takes place, the patient sinking without any marks of local disease, unless it can be said to be indicated by vomiting and diarrhœa, with some confusion of intellect. In another set, although considerable congestion has taken place, it is not to such an extent as to destroy the patient; inflammation attacks the peritoneum under a suppressed re-action, and it goes on with a surface which is almost bloodless; therefore there is little or no heat of skin; the pulse is small and weak; the expression of the countenance ghastly; and the pain in the abdomen perhaps sub-acute. There are various shades and degrees of this complaint, according to the various combinations of these two conditions of the system.

There are three other causes which enable us to account for the rapid march and fatal termination of puerperal peritonitis. The *first* which I shall mention is the occurrence of inflammation of that part of the peritoneum which covers the stomach, giving rise to those most violent symptoms which are described by authors under the title of Gastritis. In a majority of the fatal cases which have fallen under my notice, the peritoneum covering the stomach was highly inflamed; in several cases the whole stomach was in a softened state; and in all these cases there were most violent gastric symptoms. In the *second* place, inflammation of the peritoneum frequently takes place before delivery; sometimes as the original disease, and occasionally from the extension of inflammation and ulceration from the mucous membrane of the intestines. The natural pains conceal the disease during parturition; afterwards the pain from inflammation is mistaken for after-pains; and before alarm is taken, the patient is generally lost. Many examples of this have fallen under my notice since the publication of my Treatise on Puerperal Fever, and I think I am now able to anticipate what is likely to follow delivery. I have lost only one patient out of between sixty and seventy who had the disease. In the *third* place, something may be fairly attributed to the nature of the prevailing epidemic.

Treatment of Puerperal Peritonitis.—The only difference which exists between the treatment of peritonitis in the ordinary condition of the system, and that which is now under

consideration, proceeds from the two following circumstances: We have a more severe and extensive inflammation to subdue, which is more frequently combined with venous congestion, which suppresses the inflammation, and deceives the practitioner. If peritonitis attack a woman during the first two or three days after delivery, and is neglected for twelve hours, nay, in many instances, for six, any means we can employ will, in all probability, be unavailing. It is for this reason that I would rather treat the disease in an hospital than in any other situation. A physician, in such circumstances, requires almost to live with his patient, at least he should not be away from her bed-side for more than two hours at a time; nor will this be a great hardship, should he even have five or six such patients on his hands at a time,—the battle is to be won or lost in the course of twenty-four hours: but should it be sixty, a medical man must be always prepared to sacrifice his interest, and to disregard bodily fatigue, when the life of a fellow creature is at stake. If he will rest upon a bed of roses, scarcely a patient affected with this disease will be saved; and if Dr Hamilton visited his poor patients in the Lying-in Hospital only twice a-day, it so far enables the profession to account for Dr Torrance's conclusion with regard to the practice pursued. "Copious bleeding therefore, however much praised by Gordon, Armstrong, and Hey, in private practice, has always, on this recent occasion, deceived the hopes of the physicians of the Lying-in Hospital of Edinburgh, and has been from necessity laid aside." Dr Torrance says enough in one paragraph to shew the profession the puny manner in which the bleedings were executed,—that they were adopted "*without any alleviation of the symptoms;*" and the reader will be astonished when he is told the reason why Dr Hamilton appears to have under-bled, particularly after perusing the above sketch of the appearances found on dissection. He conceives that the effusion of coagulable lymph, and the consequent glueing together of the bowels, are produced by the bleeding; but he shall speak for himself. "It appeared to me, (says he,) that the effusion into the abdomen was accelerated by the bleeding."

Upon further experience, I can speak with much confidence

of the advantage of applying leeches. Many cases could be quoted, where one hundred, one hundred and fifty, two hundred, and two in which two hundred and forty were applied, first and last. They were very unpromising cases, but the ladies are now in the enjoyment of perfect health and strength. Leeches are to be applied in numbers according to the age and constitution of the patient, and the period of the disease; but it must be mentioned, that some constitutions cannot bear their application. Whenever we are in doubt, therefore, it is better to apply fewer than we would otherwise do, and repeat them according to circumstances. An ordinary constitution can well bear the bleeding from two dozen, and plethoric individuals from 50 to 100 at one application. When it is time to check the oozing of blood, we should see it done. In one case, a delicate lady who was labouring under peritonitis, twenty leeches were applied to the abdomen. Her husband was a medical man, and he ordered the nurse to stop the bleeding; she told him it had already stopped, and he went out on necessary business. On his return, he found his wife in the utmost state of exhaustion; upon examining her abdomen, he found only one orifice bleeding, but the blood was coming *per saltum*. One of the leeches had penetrated a small branch of an artery. Stimulants were necessary, and she recovered from the state of syncope. This case is mentioned here as a warning to young practitioners.

In the congestive cases, bleeding is to be had recourse to if called early, and if the pulse still possess sufficient strength. Stimulants may be necessary at the same time, and I have already shewn that stimulating and bleeding in such cases are not inconsistent with good pathology. The warm bath, stimulating frictions, and also large blisters, are to be applied; and subsequently calomel and opium may be used, together with the application of leeches. Considerable suffering, and many relapses, depend on a tympanitic state of the bowels. By percussion this state is discovered, and the best remedy is an enema, composed either of oil of turpentine or assafetida.

It is scarcely possible to give sufficiently precise directions regarding the circumstances which indicate the necessity for stimulants. Suffice it to say, that an experienced person de-

rives the necessary information from the heat of the surface, condition of the pulse, and the expression of the countenance. If the surface be cold, or even cool, particularly if there be a cold clammy sweat; if the pulse be weak, irritable, or irregular and weak, and if the expression of the countenance be ghastly, no one could entertain a doubt as to the propriety of exhibiting stimuli at the termination of any inflammatory disease.

Before concluding this subject, the proportion of deaths may be stated under each system, to enable the reader to draw his own conclusions.

The celebrated Dr William Hunter saved one patient only out of thirty-two; his practice became fixed, to give a good wine glass full of brandy at the commencement of the disease.

Dr Hulme, who considered the disease partly of a putrid nature, and who employed bleeding in small quantities, and only as a secondary remedy, lost almost every patient.

Dr Leake, who recommended bleeding in small quantities, and at long intervals, and who gave his patients bark, beef tea, and cordials, to prevent putridity, lost thirteen out of nineteen patients in one season.

Dr Gordon, when he adopted a weak, vacillating practice, lost twenty-three out of twenty-seven cases; but afterwards he used early and large bleedings, and out of fifty he lost only five.

Mr Hey of Leeds saved only three out of thirteen cases, before he began to bleed; but afterwards he was led, by sad experience, to bleed boldly and early, and he lost only two out of thirty-six patients.

Dr Armstrong, who seems to have profited early in life by the experience of others, assures us he only lost five out of forty-three.

On perusing this statement, the reader will perceive the dilemma in which Dr James Hamilton Jun. is placed, and will perhaps say in his own mind, that there is no hole through which he can escape; but alas! he does not know the ingenious Doctor; he will always escape, but always in a manner peculiar to himself. The reader will say, he cannot now assert that the cases of these authors could not be cases of puerperal

fever, because they had the lochia suppressed. It is indeed to be hoped he is not now guilty of such a blunder. What will the reader say, then, if Dr James Hamilton Jun. were to try to escape from the dilemma, by such an extravagant statement as the following? Suppose he were to say, *he held his fatal cases, in which bleeding failed in curing the disease, to be more certain proofs of the inefficacy of bleeding, than the production of forty-five cases where the patients recovered when bleeding had been used; for the cases might not be of puerperal fever at all, as had really happened in those cases cited by Drs Gordon and Armstrong, and Mr Hey of Leeds, where theirs terminated favourably under the lancet; or if they were really cases of the disease, he maintains that not the bleeding, but a natural change in the constitution, going on before that remedy had been employed, had effected the cure.* HIS FATAL CASES AFFORD POSITIVE PROOF; THE FORTY-FIVE FAVOURABLE CASES AFFORD ONLY NEGATIVE. The reader may here say, it is impossible that even a Professor in the University of Edinburgh, low as she has fallen in some of her medical chairs, could make such a statement. My answer to this is, that I shall be glad to be afforded an opportunity, upon Dr Hamilton's authority, of denying that he could ever have committed such an outrage upon common sense. This statement and offer were made in my first edition, entitled "Heads of Lectures," in 1828, and repeated in each subsequent edition.

In Dr Abercrombie's work on the Bowels, p. 189, the following passage will be found:—"I have little doubt that women in the puerperal state are liable *to two distinct forms of peritonitis, which, in the discussions on this subject, have probably not been sufficiently distinguished from each other.*" Then, the only conclusion which can be drawn is, that the author never perused the works to which he makes such a faint allusion. The two distinct forms, answering precisely to the description by Dr Abercrombie, were most emphatically pointed out by the late Dr Armstrong, and more recently by myself. I could give a true explanation of Dr Abercrombie's speculation were it necessary; in the meantime I shall leave him to enjoy the reward due to his discovery!! *

* I do not think it necessary to notice formally, the analogy which Dr Aber-

*Another and fatal variety of disease sometimes takes place after delivery, which must be noticed in this section, although it is not always connected with Peritonitis.** The fatal variety consists of hysteritis, or inflammation of the uterus, uterine phlebitis, and inflammation of the absorbent vessels of the uterus. Following the order which Dr Lee has adopted, I shall treat, 1*st*, Of inflammation of the substance of the uterus. 2*d*, Inflammation of the absorbent vessels of the uterus. 3*d*, Inflammation of the veins of the uterus.

1*st*, *Inflammation of the uterus.*—Symptoms, hypogastric pain; diminution or suppression of the lochia rigors; rapid, feeble pulse; countenance pallid, expressing anxiety and distress; cerebral disturbance, viz. headache and delirium; skin hot and dry, frequently sallow; respiration hurried; great prostration of strength; tongue loaded and foul; dark sordes about the mouth. Nausea and vomiting are occasionally experienced. The course of the disease is sometimes fearfully rapid, at others it is not fatal till towards the end of the second week. It is stated that the diagnosis "is extremely difficult." I have frequently seen cases of peritonitis, in the puerperal state, with equally distressing symptoms and speedy death, in which the most careful examination after death proved every part of the uterus to be sound, but its peritoneal coat.

At page 276. of the former edition, the severe epidemics that had occurred on the Continent, more particularly that at Paris in 1829, were briefly noticed. During the epidemic at Paris, there were forty-nine out of two hundred and twenty-

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crombie has endeavoured to form between puerperal fever, when it is severe and fatal, with erysipelas, because he does not bring a shadow of proof in its support. It is most improbable that serous membranes are liable to erysipelas; so say Bayle, Gasc, and all the most esteemed pathological inquirers of the present day.

* I have met with one case only of this disease, and therefore feel that I am not qualified, either to give an opinion, or to write on the subject. I shall therefore take the liberty of giving a brief abstract from Dr Robert Lee's paper on puerperal fever, in the 8th and 9th Parts of the Cyclopædia of Practical Medicine. The profession is much indebted to this zealous and talented pathologist, for his investigations on this subject, as well as for his following out the important discovery of the pathology of phlegmasia dolens by Professor Davis.

two fatal cases, in which the uterus was more or less disorganized.

As to the treatment, Dr Lee states, that "in all the cases of this affection which we have observed, the resources of nature and of art have proved equally unavailing in averting its fatal course."

Extract from the Report of the Dissections of Women who died in Child-bed in the General Hospital of Vienna, from 26th July to the end of August 1819, *by Dr Biermayer. Extracted from the Edinburgh Medical and Surgical Journal for July* 1824. *Vide No.* 80. *page* 83.

Fifty-six bodies were examined.—"In the head the organs were all turgid with blood; the ventricles generally contained more than the usual quantity of serum; in other respects there was nothing worthy of notice in reference to this disease.

"In the trachea there was generally found a sanguineous fluid, and its *internal surface* was *reddened.*

"The lungs were always in the greatest state of expansion, turgid with blood, frequently adhering or united by effused lymph to the pleura, which was generally, but not in all, slightly red.

"In the cavity of the thorax and pericardium, there was invariably more than the usual quantity of bloody serum; the pericardium in no case morbidly changed, nor the heart externally; but its substance, without exception, more flaccid and tender than in the healthy state. Its internal surface, particularly the valves, chiefly of the right side, of a deep red, often of a black colour; the mass of blood generally fluid.

"In the abdomen there were only two cases in which there was no unnatural fluid, *i. e.* in those cases which had been delivered a considerable time before death. In all the rest, there was found from one to two quarts of turbid, very fetid fluid, mixed with portions of coagulated lymph, and sometimes purulent matter; the latter appearance was observed in those cases where powerful antiphlogistic means had been employed, and who had survived longer after delivery.

"The peritoneum, omentum, and mesentery, exhibited, in

five cases only, no appearance of redness; in the rest it was always somewhat more or less red, particularly towards the pelvis; and they were often agglutinated with the adjacent parts.

"With the exception of two cases, the stomach and intestines were always much distended with air, and their external surface more or less red. Lumbrici frequently appeared in great numbers, not only in the small but also in the large intestines, in the stomach, rectum, and in one case, in the nostrils.

"The liver and spleen were always similarly affected, they were much more pale, flabby, and tender, than in their healthy state; easily broken down with the finger, similar to the degeneration of the uterus, and filled with somewhat fluid blood; * * * * * * the gall bladder was always filled with dark bile. The pancreas always healthy.

"The kidneys, in most of the cases, were flabby and tender. The uterus always somewhat enlarged and red. The urinary bladder always contracted.

"The internal organs of generation were everywhere covered with yellow coagulated lymph, except in two cases, in which no fluid was found in the abdomen; and in those cases in which strong antiphlogistic means were used, there was frequently a thick, yellow, purulent fluid, often externally on the neck of the womb. The ovaria and Fallopian tubes were always more or less swollen, red and tender.

"The uterus, in all cases little contracted, was more or less red externally, even in those where delivery had taken place long before, and the abdomen was not otherwise in an unhealthy condition. The substance or body of the uterus was always flabby, tender, easily broken down by the finger; in two cases, full of small holes or cavities filled with stinking blood. In two cases, the uterus, on account of the tenderness of its substance, had burst, during delivery, at its neck: in the one case, the rupture was four inches in length, and in the other, one inch and a half. The cavity of the uterus was found filled with fetid air several times, particularly in two syphilitic women. Its internal surface appeared generally covered with offensive cineritious ichor or mucus only, seldom

with offensive viscid blood. Beneath this, it was always red, discoloured, often as if slightly eroded or ulcerated, the internal membrane very much eroded and destroyed." * * * *

Such are the principal facts carefully abstracted from the whole 56 dissections.

We are further told in this Report, that the symptoms were such that the "*inflammation of the uterus and peritoneum, combined with high fever, could not be mistaken.*" The lochia disappeared either immediately, or in a few hours; and the mammæ were found empty of milk, loose, and flabby. "But, (says the Report,) the most alarming circumstance was, that while the disease was yet in all appearances a recent acute inflammation, Dr Boer, on examination with the finger, already discovered, in the mouth of the uterus, marks of gangrenous disorganization, which were rendered evident even to the bystanders, by the putrid smell of the finger."

2*d*, *Inflammation of the Uterine Absorbents.*—Dr Lee has given the particulars of four fatal cases of inflamed uterine absorbents, in his paper on Uterine Inflammation in Puerperal Women, in 15th Vol. Med. Chir. Trans. of London; and he has quoted a case, which appears to have been the first, in which the absorbents of the uterus were filled with pus.

With respect to the symptoms there is much obscurity. "The local symptoms (says Dr Lee,) of this affection are often so obscure as to escape detection during life; while the constitutional symptoms, which often resemble in a striking manner the effect produced by the introduction of specific poison into the body, are so violent as to yield to no remedies, however early and vigorously employed."

3*d*, *Inflammation of the veins of the Uterus.*—It would appear that a large proportion of these cases termed "low childbed fever," or typhoid "puerperal fever," are connected with this morbid lesion. Dr Lee states, that since the year 1827, twenty-four examples of this most insidious and fatal disease have fallen under his observation. He has given the following description of the phenomena. "In women who have enjoyed good health during pregnancy, and in whom the process of parturition has been easily accomplished, uterine phlebitis occasionally commences within twenty-four hours

after delivery, with pain, more or less acute, in the region of the uterus, accompanied or followed by a severe rigor, or a succession of rigors, a suppression of the lochial discharge, acceleration of the pulse, cephalalgia, or slight incoherence of intellect, with most distressing sensation of general uneasiness, and sometimes by nausea and vomiting. These symptoms, after a short duration, are succeeded by increased heat of the body, tremors of the muscles of the face and extremities, rapid, feeble pulse, anxious and hurried respiration, great thirst, with brown dry tongue, and frequent vomiting of green coloured matters. The sensorial functions usually become most affected, and there is a state of drowsy stupor, or violent delirium and agitation, which is followed by symptoms of extreme exhaustion; the whole surface of the body not unfrequently assumes a deep and peculiar sallow, or yellow colour; the abdomen sometimes becomes swollen and tympanitic, and some of the remote organs of the body, such as the lungs, heart, brain, liver, and spleen, or the articulations and cellular membranes of the extremities, suffer disorganization from congestion, or a rapid and destructive inflammation." Dr Lee adds, "there is scarcely an organ of the body, which has not been observed to become secondarily affected, from suppuration of the uterine veins." Occasionally, uterine phlebitis "commences at a later period after delivery than above described, and in a much more obscure and insidious form, without pain or sense of uneasiness in the region of the uterus, or any other local symptom by which the affection can be recognized. The uterus may return to the reduced volume it usually assumes after delivery; the lochial discharge may continue, and the inflammation and suppuration of the veins, which have caused the whole of the violent constitutional disturbance and destructive lesions in distant parts of the body, may have been wholly overlooked during life. In many cases which we have witnessed, this error was committed by the medical attendant, and stimulants were liberally administered, to obviate the debility supposed to exist in a specific form, without any local affections of the uterine organs." The effects of inflammation in the uterine veins are, "the formation of adventitious membrane on their inner surface, and the

deposition of coagula of lymph, or of purulent matter within their cavities." "The inflammation may be limited to the veins, but not unfrequently the muscular tissue contiguous to them, participates in the inflammation, and becomes of a dark red or blackish colour, and of an unusually soft consistence. The peritoneal covering may also be affected, and the usual consequences of puerperal peritonitis then ensue."

The subject is one of immense importance, and I trust, therefore, to be excused for quoting the following additional interesting passages, respecting the peculiar state of the veins. "The veins (says Dr Lee) which return the blood from the uterus and its appendages, may be either wholly or in part inflamed; generally, however, (and this is a circumstance in the history of uterine phlebitis, deserving particular attention,) the inflammation attacks the spermatic veins alone, and for the most part, the one only on that side of the uterus to which the placenta has been attached; and it may either confine itself to a small portion of the vessel, or extend throughout its whole course, from the uterus to the vena cava." "The same is the case with regard to the hypogastric veins, one only being generally affected. These are, however, more rarely affected than the spermatic veins; and this would seem to depend on the latter veins being invariably employed to return the blood from that part of the uterus, to which the placenta had been attached.

"But the inflammation having once begun, it is liable to spread continuously to the veins of the whole uterine system, to those of the ovaria, of the Fallopian tubes, and broad ligaments. The vena cava itself, does not always escape the inflammation spreading to it from the iliac, or from the spermatic veins. This seldom takes place to a great extent through the medium of the spermatic, the inflammation usually terminating abruptly at the opening of the spermatic into the cava on the right side, or of the renal on the left, &c. &c.

"When the inflammation affects the hypogastric veins, it may extend from these to the iliac and femoral veins, and thus give rise to all the phenomena of phlegmasia dolens."

Causes of Uterine Inflammation.—All the forms now noticed may be owing to mechanical injury from some

pressure which the uterus sustains in a protracted labour, in which the child is very large, or the pelvis rather small. They may also be produced by rashness in extracting the placenta, when the hand is introduced for that purpose into the cavity of the uterus, more particularly, perhaps, in cases of indurating of the placenta. It is said that uterine phlebitis may follow the retention of portions of the placenta undergoing decomposition in the uterus. Dr Lee allows, that although a dangerous disease, uterine phlebitis is not invariably fatal; and that "it often occurs in puerperal women, where it is not suspected," he thinks, is demonstrated by the fact, that in the spermatic and hypogastric veins of females advanced in life, calcareous concretions, and various kinds of disorganization, have frequently been observed, which must have been the consequence of attacks of acute inflammation at some remote period.

I may remark in reference to the last paragraph, that the term "phlebolites," has been applied to those bodies found in the spermatic and hypogastric veins; and that the attention of the profession has been called to this subject by Beclard, in his Anatomie Générale, and by Cloquet, in his Pathologie Chirurgicale. It has been ably followed up by Dr John Reid, an accomplished anatomist of this city, the result of whose labours on this subject will appear in the Edinburgh Medical and Surgical Journal, before this edition can possibly be published.

With regard to the treatment of these three severe varieties of uterine inflammation, I cannot speak from my own knowledge, and therefore am induced to borrow still further from Dr Lee. He states, that "in cases where the reaction at the invasion of the disease has been violent, and V. S. has been employed, the relief obtained has only been temporary, if at all experienced, and in some instances, the abstraction of only a few ounces of blood from the arm, has produced alarming syncope. When the local pain is severe, leeches and warm fomentations seem to be the appropriate remedies; but as far as our observations go, we are in possession of no remedial means which effectually controul these varieties of inflammation of the deeper seated structures of the uterus, which

we have attempted to describe." The French practitioners place great reliance on the action of mercury pushed quickly to salivation. Dr Lee states, that he gave this practice a fair trial, and that it failed, although he pushed it to great extent, and brought the system under the influence of mercury in less than twenty-four hours; "*Yet the progress of the symptoms was not arrested, and the patients died, as others had done where the remedy had not been administered.*"

CHRONIC PERITONITIS.

This form of disease sometimes succeeds to acute action in the tissue itself; sometimes it is occasioned by the extension of ulceration from the mucous coat of the bowels; and occasionally it is itself the primary disease, in which case the attack is often very insidious.

Symptoms.—Pains are occasionally felt in various parts of the abdomen, with a sense of weight or oppression; the pains come on in paroxysms, which are sometimes very severe, at other times a pricking sensation only is felt. In some cases pain is not a prominent symptom; the belly is tumid, with occasional tightness, while the rest of the body emaciates, and the strength declines slowly; fever is often present, that is to say, the pulse is quick, of variable strength and fulness, with thirst and restlessness. The tongue is in various states, either loaded, or very red, or both; constipation is a usual attendant for some time, but subsequently diarrhœa generally takes place; the stools often have a very natural appearance. The patient in all cases also experiences a sense of increased weight and uneasiness in the abdomen after a meal.

Chronic peritonitis runs its course to a fatal termination in various periods; I have known it of eighteen months standing, and sometimes the patient is destroyed in a few weeks. In the last stage the symptoms become aggravated; the features shrink; emaciation takes place to the greatest possible extent, and sometimes death appears to be owing to the patient's being worn out, or from an attack of constipation having all the symptoms of ileus, or from the supervention of acute in-

flammation, perhaps in the cavity of the thorax; all of which terminations I have seen.

It is in general a fatal disease, but I have seen some wonderful recoveries, if one may be allowed to judge from the appearances of thickening of the peritoneum, and extensive adhesions in the bodies of individuals who had survived the attack for a number of years, enjoying a tolerable share of health, and dying at last from the effects of other diseases. I lately attended a child who was observed to fall off in health and strength, and to complain occasionally of abdominal pain; he was feverish at night, but during the day was able to play about with the other children of the family; his body emaciated, while the abdomen became larger. Suddenly a decided change for the worse took place. The abdomen became more distended and painful, the fever increased, and he was confined to bed. In a few days a fulness was observed in the umbilical region, and an inflammatory blush. A natural opening soon took place, and a bilious-looking matter was discharged, with portions of food, such as barley, &c. When the discharge ceased, the symptoms became aggravated. He lived for some months. On examining the abdomen after death, there was an appearance of an abscess extending for several inches around the umbilicus, and immediately in contact with the intestines, round the circumference of which there were strong adhesions. In this cavity there was matter similar to that discharged through the external opening. On looking attentively at the parts, there were found nine openings into different parts of the intestinal tube. Some of these were large, others small; the orifices were ragged, and appeared to be the effect of ulceration, which opinion was amply confirmed by a minute examination of various portions of the mucous membrane, in which ulcerations in various stages were observed. The contents of the abdomen were all matted together, and the mesenteric glands were enlarged, and the mesentery thickened.

Chronic peritonitis is sometimes mistaken for other diseases, chiefly for dropsy, dyspepsia, and hepatitis.

Causes.—It has been already stated, that this disease sometimes follows an acute attack, and as the consequence of it. It is also produced by the extension of ulceration from the

mucous coat of the bowels; hence it sometimes occurs as one of the sequelæ of fever, diarrhœa, and dysentery. It is occasionally caused by external violence. It may also be produced among the children of the poor by insufficient clothing, the use of unwholesome food, as well as by the continual irritation from worms. In women it sometimes occurs at that period of life when the menstrual discharge ceases. It is probable that chronic peritonitis is often the consequence of irritation, produced by dysmenorrhœa, tumours growing from different parts of the uterine system, and by extra-uterine pregnancies.

Appearances on Dissection.—The whole intestines are sometimes agglutinated into one solid mass, involving the liver, spleen, and other parts; generally, however, we find the intestines and omentum only in that condition. Occasionally it is seen to affect the liver and parts in its neighbourhood, which are covered with a false membrane that can be readily peeled off, leaving the peritoneal coat attached to the organ. The disease may be confined to the contents of the pelvis, as is sometimes seen in scirrhous affections of the rectum and uterus, and diseases of the ovaria. It appears to me, from the repeated examination of extensive adhesions of the pelvic contents, in connexion with a small and circular os uteri, that chronic inflammation of the peritoneum may hereafter be found to be produced by the constant suffering, and consequent state of irritation, during the course of dysmenorrhœa. Occasionally the peritoneum is thickened every where without adhesions, but this is more frequently observed when there is an effusion of a serous fluid into the cavity of the abdomen, and particularly if it exist in any quantity. Sometimes the effusion is puriform. The colour of the peritoneum varies exceedingly; it is sometimes almost as red as if painted with vermillion, with large red vessels ramifying in different directions; sometimes the redness is confined to particular spots, as if produced by ecchymosis, in other places it is yellow, blue, purple, slate-coloured, black; but perhaps some of the discolouration may be owing to *post-mortem* changes. In some rare instances, the peritoneum appears smooth; in general it is rough from irregular elevations; ragged, which last appearance is sometimes, though rarely, produced by ulceration; most fre-

quently it is occasioned by the rough state of the membrane itself, and by very fine long irregular bands forming adhesions. On some occasions, the peritoneum presents partial fungosities, slightly elevated, extending in patches of irregular shapes, and of a red colour, looking very much like a coagulated bloody effusion. Chronic inflammatory action in the peritoneal coat, is a frequent cause of tubercular formation. I have seen tubercles in the peritoneum lining the general cavity, covering the intestines, stomach, liver, and spleen; also in the peritoneum which forms the omentum, mesentery, and meso-colon. Sometimes the mesenteric glands are also affected, but I have never seen them so without finding the corresponding parts of the mucous membrane of the intestine inflamed, more generally extensively ulcerated; so that I apprehend the too sweeping term "*scrofula*," has been applied to these formations upon limited or erroneous pathological views. The tuberculated state of the peritoneum generally takes place after the lungs have been attacked with the same disease; sometimes from chronic inflammation of the peritoneum, particularly when it succeeds to external violence. The tubercles on the peritoneum are sometimes of the miliary kind, occasionally crude, sometimes hard, and of various sizes up to that of an orange, occasionally resembling masses of coagulated blood; at other times having very much the character of the diseased structure termed medullary sarcoma, and they exist either singly or in groups hanging like bunches of fruit.

This description is drawn from cases and dissections which have fallen under my own observation; and my museum and portfolio contain preparations and representations of all the morbid appearances above stated, which were capable of being so preserved.

Treatment.—The disease is frequently a hopeless one, before medical advice is sought; but if the case should be ever so hopeless, it is the duty of a physician to use his best exertions up to the very period of death, as remarkable recoveries have been known to take place; indeed, I have remarked, that in proportion as pathology has advanced, the old practice of "giving up" patients has declined. We can almost always mitigate the violence of the symptoms, and place

the patient in a comparatively comfortable situation, when there can be no hope either of curing the disease, or of prolonging life. The question of general bleeding can rarely be entertained, yet I have met with a few cases in which it was loudly called for, and was productive of benefit. The frequent application of leeches, whenever a patient complains of pain, is of great service, together with contra-irritation, produced either by stimulating embrocations, tartar emetic ointment, or common blisters. Hot applications to the abdomen may be useful, together with the frequent employment of the warm bath. Assiduous attention to the bowels, however, forms a most essential part of the treatment; this is to be done, not by strong purgatives, but by very gentle laxatives, united with hyosciamus, and large tepid unstimulating injections used regularly once, sometimes twice a-day. Opiates are sometimes serviceable, but their use is often contraindicated by constipation. The employment of drastic purgatives in these cases cannot be defended, and three cases might be stated within my own experience, in which they produced fatal attacks of acute peritonitis. It is almost unnecessary to add the importance of attention to diet, which should be nourishing, but bland and unstimulating, as well as easy of digestion. Ass' milk once or twice a-day, is therefore to be employed, but patients should avoid distending the stomach much, and taking any article which they know from experience will produce flatulency, as the violent paroxysms of pain, which have been mentioned in the description of the symptoms, may frequently be traced to the presence of flatus. The knowledge of this will therefore lead us, during such a paroxysm, to give a carminative, but a turpentine injection will answer better. Exercise should be avoided, if motion produce even the slightest uneasiness.

INFLAMMATION OF THE MUCOUS MEMBRANE OF THE STOMACH AND BOWELS.

Before treating of the different diseases depending upon morbid states of the mucous membrane of the stomach and bowels, it will be of advantage to the student, to give a sketch of the different changes produced by inflammation in that tissue.

It is a point of the first importance, to determine the natural condition of the mucous membrane, in order to enable us to ascertain the appearances produced by disease. It is admitted, I believe, by every one, that the mucous membrane of the stomach and bowels presents, in the most healthy state in which we see it after death, a whitish appearance, with a slight tint of rose colour; that although blood-vessels may be seen here and there, yet they are not observed arborescing in great numbers, nor do we see any discoloured patches, unless there has been some great impediment to the circulation, or a natural change towards decay. Indeed, it is to be apprehended that some of the tints described with so much minuteness and accuracy by French pathologists, may be attributed to this last cause. It is stated, that the stomach becomes more vascular, and of a redder colour, during the act of digestion, than at any other period; which appears to be very probable, and may account for the red appearance found in the bodies of criminals after execution.

On opening the stomach of an individual who has suddenly died from accident, or from some disease unconnected with the bowels, the mucous membrane will be found slightly coated with mucus, which is not difficult to remove; and if the body have been opened within two or three days after death, it will be found in numerous folds or rugæ, which seem to be produced by the contraction of the muscular coat of the organ, leaving the mucous membrane free, so that it forms itself into folds, which it is conceived have nothing to do with a diseased

condition of the inner membrane itself. In a healthy state, the mucous membrane is not easily abraded.

The part of the stomach which appears to be most liable to inflammation, is the splenic extremity. In considering the diseased appearances of the stomach and intestines, it will be best to do so under the following four heads; viz. *colour, vascularity, exudation, alterations of structure.*

1*st*, With respect to the colour, we have to determine whether or not it be owing to *post-mortem* changes; and we must also be careful to avoid the error into which Broussais and his disciples have sometimes fallen, of attributing every change of colour to inflammatory action. The reader is referred to Dr Yellowly's observations on the vascular appearances in the human stomach, which are frequently mistaken for inflammation in that organ;* and more particularly to the first and third cases, in which the whole intestinal canal was minutely injected with dark-coloured blood in individuals who suffered the last sentence of the law. In these cases, Dr Yellowly very properly supposes that the circulation is carried on in the capillaries for some time after death. The appearance of the vessels, the exudation, and the structure of the mucous membrane itself, will, however, generally inform us, whether the colour described in Dr Yellowly's paper is fortuitous, or owing to diseased action.

We must also be careful to distinguish whether the colour depends on infiltration of blood into the sub-mucous tissue, or on inflammation of the membrane itself. A section of the part will shew this at once; for on looking at the cut edges, we shall see the mucous membrane separated from the muscular coat by the infiltration; the former having its usual healthy appearance. But it must be recollected that inflammation and infiltration very frequently co-exist; and when we wish to decide whether the mucous membrane is discoloured, the suspected part must be extended upon the finger, and a scratch made with a scalpel through the mucous coat itself, which will give us an opportunity of ascertaining its vascularity and structure. The chief discolourations of the mucous membrane

* In the 4th vol. of the London Medico-Chirurgical Transactions.

resulting from disease, are, bright red, dark red approaching to purple, brown, slate-coloured, and black. Minute shades of these colours are not noticed, because they are unimportant; nor shall I mention a number of other discolourations which are seen on dissection, because they are very doubtful signs of disease. It must be confessed, after all, that we are very liable to be deceived about the colour, as it is the most frequent, and, I apprehend, the first *post-mortem* change which takes place.

2*d*, *Vascularity*. Our attention should, in the first place, be directed to ascertain whether the vascularity is arterial or venous; if the latter, large, dark-coloured veins will be observed ramifying under the mucous membrane, and there will be few minute, arborescent vessels containing red blood. In fact, we shall see the appearances which Dr Yellowly has so faithfully described in the two cases already quoted; in the first of which, "the whole of the abdominal viscera were loaded, as if by minute injection, with dark-coloured blood. *Here and there, however, there were florid vessels, which were distinctly traceable into dark-coloured ones.*" In the other, "the whole of the intestinal canal was minutely injected with blood, which was, for the most part, of a *dark crimson or purple, but here and there of a florid hue.*" If the vascularity be arterial, and connected with inflammatory action, we shall see red points, or numerous red vessels running in lines or patches, with or without ecchymosed spots in the mucous membrane. We shall observe them not in depending parts only, in which situation they are always doubtful signs of inflammation, unless accompanied by a corresponding exudation or alteration of structure. It is always necessary to make a section, first of the mucous membrane, and then of the other structures, to prove whether the vascularity exists in the mucous coat or in the other tissues, or in all of them; if in the former, a slight cut made through the mucous membrane will divide the vessels, a little blood will exude, and the parts beneath will have the natural white appearance; and, upon tearing away the mucous membrane with a pair of forceps, the white appearance of the subjacent parts will be still better seen. The vascularity is doubtful when there is disease of the heart, or any other cause which obstructs

the circulation. Even in that case, however, I imagine the vascularity must be regarded as a diseased appearance; and, particularly, when it is recollected, that it frequently terminates in inflammation, and even ulceration, as will be shewn hereafter, when treating of phthisis.

In estimating the extent of the vascularity, we ought to recollect that it must diminish very considerably after death, and particularly in recent inflammations. The tunica conjunctiva of an ophthalmic patient, loses its turgescence and redness at death, or soon after.

3*d*, *Exudation.* The first effect of inflammation on all secreting surfaces, is supposed to be a diminution of the natural secretion; but it is not certain whether this holds good in the mucous membrane of the stomach and bowels. In several instances it has presented a dry appearance, but these were cases of long standing chronic inflammation. The exudation merits our careful attention with regard to its tenacity, quantity, and colour. If it be viscid, and in considerable quantity, upon a surface which presents many red vessels, however partial the vascularity may be, it is to be regarded as the product of irritation or inflammation. It varies very much in colour, from that of ordinary mucus, to pus; and a red matter like currant jelly is frequently found; the exudation has been represented to be occasionally so corrosive as to excoriate the fingers of the dissectors; but it is probable there is some mistake about this statement. There can be no doubt, however, that the mucous membrane yields a large quantity of thick tenacious mucus, colourless like starch, when it is under the influence of any kind of irritation; this is well illustrated in the experiments performed with the tartrate of antimony in considerable doses, which were published by me in the 258th number of the Lancet. With respect to the red exudation, two kinds are observed; one, like very red currant jelly, which is produced when the membrane is under a high degree of inflammation; the other, of a much darker hue, darker even than venous blood, more fluid than the other, and occasionally discharged in very large quantity; this will in general be found in cases where there is great congestion of the mucous membrane, along with some degree of inflammation. A

similar discharge often takes place in diseases of the liver and spleen.

4th, Alterations of Structure. The first appearance which falls to be noticed, is the pulpiness, with thickening of the mucous membrane. When it is in this state, the surface, if closely examined, looks rough and granular, and the membrane can be easily rubbed off. Abrasions are sometimes seen, but not so frequently the result of acute inflammation as of chronic; at all events, they are not so extensive. This is an appearance, however, concerning which we are very liable to be deceived; for when the membrane is soft, abrasions are easily produced by handling. Those which are the consequences of disease, will be readily recognized by placing the part in water, a portion will be entirely awanting, the edges will look ragged, and the surrounding parts will be found detached. Ulcerations are now known to be a frequent result of acute inflammation; but there is some degree of ambiguity about the tissue primarily involved. Some allege that they exist in the glandular structure, others in the mucous follicles; while there are some who assert that the ulcerations take place in the mucous surface generally.

It is now well ascertained that some parts of the mucous membrane of the stomach and bowels are more liable to inflammation and ulceration than others. The inferior half of the ileum is the part most frequently found inflamed and ulcerated; according to my experience, the colon stands next to the ileum, and it is an extraordinary fact that the jejunum is seldom affected. Why it should possess this remarkable immunity from disease, has never been explained. In a case of poisoning from corrosive sublimate, the jejunum was in a healthy state, while the stomach, the lower part of the ileum, the colon and rectum, were affected most severely, even to the destruction of the mucous surface, and thickening of the other parts of the intestine, the peritoneal coat only remaining sound.

In proceeding to examine a piece of intestine, it should be carefully cut open with a blunt-pointed pair of scissors; and after the exudation is observed, the parts should be washed in water, till the mucus is removed from its surface. On some

occasions we shall see numerous dark-coloured, distinct points, somewhat elevated with a depression in the centre, which are the mucous follicles enlarged;* in some places a number of these points will be seen to coalesce, sometimes in a circular space, but in general they are more of an oblong shape. The surface is elevated, and sometimes spongy; and upon making a section through this part, it will in general be found that the sub-mucous tissue is principally involved in the disease, and occasionally also the muscular tunic. On looking at the surface through a glass, ulcerations will be discovered. This appearance is most frequently observed in the lower part of the ileum and caput cæcum, in children who have died of bowel complaints.

Occasionally numerous distinct points will be observed, as if a pen-full of red ink were spattered over the surface of the mucous membrane; this I imagine is occasioned by an exudation of blood in the follicles, which are thereby distended. It is also noticed by Billard, to whose work upon the diseased conditions of the mucous membrane the reader is referred for much useful information, as well as to the 1st and 2d vols. of Andral's Clinique.†

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* There is a preparation in my museum, showing the mucous follicles of the colon, so large that many of them would admit a swan-shot. The colon is contracted. The patient died after a surgical operation.

† Since the publication of the first edition, M. Andral has favoured the profession with a work on pathology, which cannot fail greatly to advance the interests of Medical Science. The work is divided into two parts—the first treats of general, the second of special pathological anatomy. There is perhaps no individual so well qualified to undertake such a laborious task as M. Andral. He is not only placed by universal consent at the head of the French Pathological School, but I believe, had the scientific medical men of Great Britain been polled, they would, with one voice, have confirmed the choice of his own countrymen. Few have had such extensive opportunities of examining the physical changes produced by diseased action; and I believe still fewer are to be found who could give such graphic descriptions. He has conducted himself with great fairness towards his pathological opponents; and those who have followed similar pursuits, will agree with me that his delineations bear the stamp of truth. A faithful translation of this excellent work has lately appeared, the joint production of Drs Townsend and West of Dublin. Those who are not familiar with the French language, may feel obliged to these gentlemen for putting such a work into their hands,—a work which, from the style in which it has been

On other occasions ulcerations are observed, of a circular or oval form, with defined margins, attended by loss of substance, not only of the mucous membrane and the sub-mucous tissue, but extending into the muscular coat, which may be seen in different places in a ragged state. In addition to this, the mucous membrane is sometimes excavated to a considerable extent. The ulceration often destroys the greater part of the muscular coat, so as to affect the peritoneum, which will then be found thickened and inflamed; the external surface being either covered with lymph, or looking like an excrescence of a dark red colour. Occasionally, when ulceration attacks the mucous coat, the sub-mucous tissue and the muscular coat become infiltrated with lymph, producing a thickening of the rest of the intestine, as if it were intended to strengthen the part, and prevent rupture. When ulceration first attacks the muscular coat, it would appear that an effusion of lymph takes place in the outer cellular tissue, in which case it is difficult to separate the peritoneum from the muscular coat at the diseased part. Occasionally, indeed, the ulceration extends through all the tissues, allowing the escape of the contents of the bowels into the abdomen. Sometimes we observe distinct ulcerations on the mucous surface, inclining to the circular form, which are considerably elevated above the surrounding parts, resembling carbuncles, and having an appearance as if they were to throw off a slough. Upon making a section of the intestine through the centre of one of these ulcerations, the cellular substance, and a part of the mucous coat, will be observed to be much thickened, and occasionally of a dark brown colour. Ulcerations are sometimes circular, at others oval; sometimes they run in lines, and on other occasions are observed to be irregular in shape. In

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brought out, will not, I fear, remunerate the translators. It is worth a thousand volumes produced by a literary compiler. It looks very suspicious to see a review highly commendatory of his own work in the journal of which Dr Craigie is editor, and another of as contrary a character of that of Andral. Had Andral been a British writer, I would have left him to fight his own battle with the reviewer; but being a foreigner, I think it desirable that the selfishness of one should not be thrown as a slur upon a whole nation.

size they vary from that of a millet-seed, to be so extensive as to occupy a larger space, sometimes the whole intestine. In general, ulcerations of the colon are more irregular in shape and size, than of any other part of the intestine. In some instances ulcerations are surrounded by indurated margins, in others the mucous membrane seems to be merely removed. Ulcerations in the small intestines are, for the most part, found in that portion of the tube most distant from the mesentery. In the colon they are sometimes seen to run in the course of the transverse bands, which are greatly thickened and indurated, while the mucous membrane may be partially or completely removed. Occasionally these ulcerations have a red appearance, or are tinged of a yellow or greenish colour by the feces or bile, and are surrounded by a great number of red vessels; but in other instances, they present a blanched appearance; which last will be principally observed in cases where there has been a great discharge by stool. In many instances, the part of the intestine which is already ulcerated will shew few or no red vessels, while other parts that are only advancing to that condition display intense arborescent vascularity.

Ulcerations produce contractions of the calibre of the whole tube; but this is rare, unless the whole mucous surface be involved in the disease. It is not exactly the ulceration which produces the contraction, but an effusion of lymph into the other coats and cellular tissues, causing considerable thickening. Occasionally we see the mucous membrane intensely red and thickened, partly from inflammation, and partly from infiltration; and in one or two places presenting a seared appearance, as if it had been touched by a red-hot iron; it looks somewhat puckered and very dark coloured, and sometimes the neighbouring part is slightly mottled, as if from white granulations; but this is a rare appearance, yet I have seen it on several occasions, and always in the stomach.

An œdematous condition of the sub-mucous tissue is occasionally the result of acute action in the mucous membrane; but it may be also found in cases of general or partial dropsy. When the mucous membrane is sound, the effusion is not to be regarded as the result of inflammation. An effu-

sion of air is also occasionally found in the sub-mucous tissue; but whether the result of inflammation, or a *post-mortem* change, was not satisfactorily determined till the appearance of cholera in Edinburgh. In several cholera cases, an extensive effusion of air was found in the sub-mucous tissue, when the dissections were performed a few hours after death,—too short a time to allow of such a *post-mortem* change. Mortification of the mucous membrane is also an occasional result of acute inflammation. This presents itself to us under two forms; the one is generally observed in the stomach in cases of fever, and in the last stage of phthisis, in which the mucous membrane is removed over a great extent of surface, leaving the parts of a dark colour; the other is observed in the intestine, and particularly about the cæcum and ascending colon, in which the mucous membrane is lying loose, and in shreds of a very dark colour, and having the most offensive gangrenous odour.

Inflammation of the mucous membrane, more particularly of the colon and rectum, terminates in a general thickening of the membrane and the sub-mucous tissue; and occasionally the muscular coat is also involved. The mucous surface is soft and spongy, sometimes partially abraded and very much thickened and discoloured; in some places of a bright red; in others, of a dark mulberry colour; no distinct vessels can be seen, and the discolouration seems to be partly owing to infiltration of blood. This appearance is very apt to be confounded with mortification, and is principally observed in the most acute form of tropical dysentery; but I have had many opportunities of seeing it in this country, in cases which ran their course in from eight to fourteen days. In some of these the intestine is more than the eighth of an inch in thickness,—the preparations are preserved in my Museum.

Sometimes the mucous membrane of the colon and rectum, together with the muscular coat and sub-mucous tissue, are seen simply in a state of hypertrophy, to a great extent, which appears to me to be the result of former inflammatory action; many of the subjects had been in warm countries, and had suffered from dysentery.

It is well known that ulcerations, with considerable loss of

substance, undergo the healing process; and that for some time afterwards, the parts so restored may be distinguished by an appearance of cicatrization, which pathologists are well acquainted with, and which is best observed in old cases of dysentery. A beautiful preparation, shewing these appearances, is in my Museum.

Sometimes we see tubercles in the mucous membrane itself, with more or less extensive ulceration; or the tubercles are found in the sub-mucous tissue, with ulcerations on the mucous surface, in various stages, and extending from the tubercular elevations. These appearances are also principally seen in the colon in cases of phthisis.

There are, no doubt, many other appearances which are produced by inflammatory action in the mucous membrane; but a minute description of all would require a separate treatise, and is not consistent with the plan of this work.

Competent judges may deem the above description very imperfect. I can only say it is drawn from nature, and it will afford me much pleasure to demonstrate its general correctness, by shewing the preparations and drawings in my collection from which it is taken.

INFLAMMATION OF THE MUCOUS MEMBRANE OF THE STOMACH.

It is difficult to determine the meaning of most writers when they speak of Gastritis. Some use this term to indicate inflammation of the peritoneal coat of the stomach, which is a rare disease; others, the mucous. A great deal of obscurity also prevails in different works, from the use of the terms phlegmonous and erysipelatous, adhesive and erythematic, which I shall therefore be careful to avoid.

By gastritis, I mean to express an inflammation of the mucous membrane of the stomach, frequently involving the sub-mucous tissue, and occasionally the muscular coat.

Inflammation of the mucous membrane of the stomach exists in various degrees of intensity, from the most acute to the slightest sub-acute form; and it may also be chronic. Acute inflammation of the mucous membrane of the stomach is a

rare disease; it often exists in a sub-acute, but more frequently in a chronic form.

Symptoms of Gastritis.—There is a burning pain in the region of the stomach, increased on pressure; a constant desire for cold drinks, which are immediately vomited; nausea, and inclination to retch, are incessant; the heat over the surface of the epigastric region is considerable, while the extremities are perhaps cold. At the same time the patient frequently complains of sore throat; and upon examination, the fauces will be found inflamed. Hiccup is a troublesome symptom. The state of the tongue cannot altogether be depended upon; in general, however, it is very red at the tip, and round the edges; loaded, and occasionally very rough in the centre, and towards the root; sometimes, in long standing chronic inflammation, it is red, glazed, and smooth; although I feel persuaded that this last condition of the tongue takes place more generally when the intestines are inflamed and ulcerated, than the stomach. The breathing is anxious and quick, and the patient restless; the pulse is small, and the prostration of strength soon becomes very great; the countenance is expressive of great anxiety, and the individual makes great complaint. Towards the termination of the disease, the features shrink, and the patient lies upon his back. The matter vomited in the early stages, consists of the fluids taken into the stomach, occasionally mixed with bile and some mucus; but at last the black vomit takes place. The bowels are generally constipated.

There is scarcely any acute disease which so quickly exhausts the powers of life, and hence it is said that the symptomatic fever is of a typhoid type. It happens occasionally, however, that the symptoms are exceedingly mild, even when the disease has been produced by mineral poisons; and appearances denoting great danger, do not come on till within a few hours of the fatal termination. This was particularly well marked in a soldier of the 17th foot, who swallowed two drachms of the oxymuriate of mercury, and who died unexpectedly eight or ten days afterwards on the close stool; having been able to get out of bed, and walk unsupported.

It has been already stated, that the acute form of this dis-

ease is a very rare occurrence, and that it more frequently exists in a sub-acute and chronic form; and we see these most frequently in fevers, in dyspepsia, and in the last stage of phthisis.

Causes.—This disease is produced by any of the common causes which occasion inflammation; by wounds and contusions, as well as by poisons and other acrid substances taken into the stomach, also too great indulgence in the use of ardent spirits: it sometimes follows in the train of other diseases, as cholera morbus, &c.

Appearances on Dissection.—On opening the stomach, a considerable quantity of thick, tenacious mucus will be observed; and the mucous membrane itself will be found in one or other of the conditions already noticed in the general description. It may be mentioned, that the appearances produced by poisons so closely resemble the lesions occasioned by ordinary inflammation, that no distinction can be made; and the nature of the case must rest upon the fact of poison being found, and its powers ascertained.

Treatment.—Bleeding copiously and frequently must be had recourse to, and at short intervals; there is no disease which requires a more decided use of the lancet. The application of leeches in considerable numbers may also be found necessary, either after the inflammation has been somewhat subdued by the lancet, or when the physician is afraid that it is too late for general bleeding. Blisters are, of course, to be employed in severe cases. Laxative medicines are also necessary; but it is needless to administer them till the diseased action is considerably subdued, as they will increase the already too irritable state of the stomach; therefore, in the first instance, we are to endeavour to open the bowels by injections. Opiates are very useful; but it is necessary to caution young practitioners against the routine practice which is too generally followed, of trusting to opium whenever there is irritability of the stomach. When opium is given, it is often advantageous to exhibit it in the form of pill combined with calomel. The warm bath, and hot fomentations to the part affected, are means which must not be neglected; and it is necessary to restore and support the natural heat of the extremities.

During convalescence, the diet must be carefully attended to, and should merely consist, for the first day or two, of arrow-root or fine oatmeal gruel.

INFLAMMATION OF THE MUCOUS MEMBRANE OF THE BOWELS.

Inflammation of the mucous membrane of the bowels, varies perhaps more in its external signs than that of any other structure in the body, and for the most part its attack is most insidious. The disease is most frequently met with in a subacute and chronic form; even when acute, the symptoms are sometimes exceedingly mild; and this takes place occasionally in cases where we subsequently find, on dissection, not only the most extensive inflammations, but ulceration; which will be more fully shewn when treating of dysentery.

Symptoms.—The combination of symptoms denominated fever, take place with more or less intensity; in fact, as already shewn, inflammation of this tissue is the cause of many of the fevers which prevail in all climates. Pain is often very slightly felt, in comparison with that which generally attends peritonitis; when the small intestines are affected, the pain is experienced more about the umbilicus than in any other region; cold drinks aggravate it, as well as any indigestible substance taken into the stomach. The pulse is found in very different states even during the same day; it is frequently quick, but not in general so hard as in peritonitis. The skin is generally hot and parched during the day and night, but towards morning some degree of moisture takes place, and it is then only the patient enjoys comfortable sleep. Thirst is often very urgent.

Tympanitic distention causes considerable suffering to the patient, and aggravates the constitutional symptoms. The tongue is not altogether a sure index of the state of the mucous membrane, as I have seen it perfectly clean and natural in colour, or foul without redness, when dissection revealed most extensive inflammation. But in general, the tongue will be found to be more or less red at the tip, and round the edges, however much it may be loaded in the centre; sometimes it is altogether red, and looks raw, and perfectly smooth like

varnished leather; when it is unusually red, I look upon it as a certain indication of very considerable irritation, or of some degree of inflammation or ulceration of the mucous membrane of the bowels. When the superior parts of the tube are diseased, there is more or less nausea and tendency to vomit; when the inferior parts are implicated, we find pain in the iliac regions, and in the course of the colon, with more or less diarrhœa, and considerable discharges of flatus; and when the colon is severely affected, there is that twisting pain in the bowels, which in medical language is denominated "tormina;" it comes on in paroxysms, with intervals of perfect ease. The patient complains of it every hour, or half hour, and even at shorter intervals, and it is always followed by an irresistible desire to go to stool. When the rectum is involved, there is considerable straining, and the patient can scarcely be induced to leave the close-stool, and yet he passes nothing but a little mucus mixed with blood, or a small quantity of scybalous matter, with some flatus.

Every experienced medical man, upon reading these passages, will perceive that I have been describing the symptoms of diarrhœa and dysentery; but my wish at present is to describe inflammation of the mucous membrane of the intestines generally, as the peculiar nature of the discharges by stool, which constitute diarrhœa and dysentery, do not always attend inflammation of that membrane.

Women after delivery are sometimes seized with this affection; and some imagine, that when peritonitis takes place in that condition of the system, it is always owing to the extension of the inflammation from the mucous tissue. But although sometimes the case, this cannot be assented to as a general rule. An instance of pure inflammation of the mucous membrane of the small intestines lately occurred to a woman, after an abortion at the fourth month, which resisted the most active practice, and terminated fatally. On dissection, traces of active inflammation of the whole membrane were discovered, which several days maceration in water did not destroy; and a portion of it, which is put up in spirits in my Museum, still retains its red colour. There were also a great number of abrasions, which, had the woman lived a few days longer,

would have been converted into deep and extensive ulcerations. Another fatal case occurred in the practice of a friend, after delivery at the full period. In this lady, the disease was apparently produced by a large quantity of grapes she had eaten with the skins and stones, which were found in different parts of the intestinal canal. But in neither of these cases did the peritoneum suffer.

Treatment.—If the disease be very acute, the lancet must be used; but the cases which usually fall under our notice, will yield readily after the application of a dozen or eighteen leeches to the abdomen, together with the warm bath, fomentations, and the gentlest laxatives. If there be much tympanitic distention, injections with a small quantity of turpentine, or with an infusion of tobacco, will be found very serviceable. Opiates are useful, and the best preparation perhaps, in such circumstances, is Dover's powder. We shall seldom be obliged to apply blisters, except in very acute cases; but the disease is often mitigated by the application of hot oil of turpentine, or a mustard poultice, which is to be removed in a short time, so as not to occasion vesication. Attention must be paid to diet and clothing, particularly during convalescence.

Chronic Inflammation of the Mucous Membrane.—I have frequent occasion to see cases of long standing inflammation of this tissue. They will be often found connected with some cutaneous eruption, as lepra, psoriasis, &c. or with ulcers on the extremities. It will be observed, that the patients enjoy best health when the eruptions are most severe, or the ulcers most troublesome, and attended with copious discharge. These circumstances were first forced upon my attention, upwards of twenty-five years ago, in a warm climate, and subsequent observations have tended to confirm them.

These pathological considerations would seem to demand a different treatment from that generally pursued in diseases of the skin, as well as in many ulcers on the extremities, and will shew surgeons the propriety of attending to medical pathology, so as to enable them to treat even a common ulcer. I do not mean to assert that all ulcers are produced by this cause, but that many are so, I have no doubt; and it is necessary to

point out the circumstances which will enable a young practitioner to distinguish them. When a person affected with an ulcer says that he feels in better health when the ulcer is open than when it is healed, we may suspect that there is some internal disease; but when we likewise find his skin harsh, his thirst increased, the appetite impaired, or fastidious, together with some degree of nausea; if there be uneasiness, fulness and oppression in the abdomen, increased after taking a cold drink, or after meals; if he be alternately affected with constipation and diarrhœa, the evacuations being fetid and discoloured; if the tongue be loaded, and of a red colour at the tip and round the edges, or universally red, or loaded, but covered with large and elevated papillæ at the root: If any of these symptoms exist, even in a slight degree, along with the ulcer, or become increased after it is healed, we may rely upon it, that the mucous membrane of some part of the intestinal tube is affected.

Treatment.—In the cases I have described, whether attended by ulcerations or eruptions, I have sometimes seen the most striking benefit from general bleeding; but this is not often necessary, unless the eruption be attended with much inflammation of the skin. In general, leeches applied every second or third day about the umbilicus, and repeated for some time, together with the general warm bath, gentle laxatives, a bland dry diet, never allowing the patient to eat a large quantity at a meal, will be productive of great benefit. Subsequently contra-irritation, produced by the tartrate of antimony ointment, is to be used; but I shall speak more fully upon the subject, in the second volume, when treating of cutaneous diseases.

DIARRHŒA.

A person who has frequent liquid stools, is said to have a diarrhœa, which may exist with or without fever. The evacuations are almost always fetid, discoloured, watery, or somewhat slimy, containing more or less feculent matter. Sometimes, on examining a watery or a slimy stool, small, round, and hard masses of feces may be found. Diarrhœa may also be attended with thirst; griping pains in the belly,

which become relieved for a short time after an evacuation; and there is frequently tenesmus.

Pathology.—Diarrhœa is to be looked upon as a mere symptom instead of a disease, in which light it is too frequently regarded. The disease is some irritation or inflammation of the mucous membrane of the bowels, produced by fright, the application of cold, unwholesome, and indigestible food, diseased biliary secretion, constipation. These are the principal causes; so that we may have diarrhœa with and without inflammation. When there is inflammation, the constitutional symptoms are pretty well marked by rigors, heat of the surface, and state of the pulse.

Treatment.—From the short pathological description given above, it will be seen that the treatment must be considerably modified. If the affection be produced by the application of cold to the surface, the warm bath, a dose of Dover's powder, and subsequent attention to clothing, and particularly preserving the heat of the extremities, will be all that is required. If by unwholesome food, it must be avoided for the future; gentle laxatives must be given, to hurry the passage of the offending matter through the bowels, followed by an opiate. If by diseased biliary secretion, which is to be recognized by the existence of nausea, or even vomiting of considerable quantities of bile, together with the passage of bilious stools, which perhaps will produce a pungent sensation in the rectum, and considerable tenesmus,—a little calomel and opium may be prescribed, followed by small doses of Epsom, or any other salts, largely diluted with water, together with copious drinks of gruel, or barley water, or any other bland diluent. If from constipation, which can only be recognized by examining the stools, that state must be removed by gentle laxatives, frequently repeated, conjoined with opium or hyosciamus, and assisted by unstimulating injections. In this case, the warm bath is also serviceable; and after the bowels are fairly cleared of the hardened feces, the irritation is to be subdued by an opiate. If, in any of these cases, there should be considerable pain in the belly, with fever and a hard pulse, bleeding may do good, and can rarely do harm. But should diarrhœa depend on inflammation of the mucous membrane, or should

inflammation supervene during the progress of the disease, bleeding, either general or topical, ought to be employed, if the means above recommended do not succeed. Cases have occurred to me, where nothing else was necessary after abstracting blood from the arm, but which had previously resisted all the ordinary remedies for many days. If, notwithstanding the employment of these means, the patient be not relieved, or if he be so weak as to make us anxious to save blood, an injection of tobacco may be perhaps substituted. Opiates, attention to the diet, and contra-irritation, must be had recourse to. If in any case there be much tenesmus, a tea-spoonful of laudanum, mixed in an ounce or two of gruel, is to be thrown into the rectum.

It would appear that Hume, the celebrated historian, died from ulceration of the bowels, which was not recognized by his physicians.*

BOWEL COMPLAINTS OF CHILDREN.

The pathological observations already made in the last sections equally apply to the bowel complaints of children. In the course of practice, it is distressing to see so many children carried to the grave from a diseased condition of the alimentary canal; although there is no class of complaints, which, when taken early, and treated according to good pathological principles, are more under controul. They frequently terminate by producing marasmus, and a complaint which I have presently to notice, under the name of *Tabes Mesenterica.*

Much mischief is occasioned by the method too generally adopted immediately after birth. A child is scarcely dressed, when a tea-spoonful of castor oil is wantonly forced down the throat; or a great deal of sugar and water is given, for the unnecessary purpose of purging away the dark matter which collects in the large intestines during the last two or three months of its uterine life. We ought to be in no hurry to expel this matter, as if it were a virulent poison, the re-

* The account of his symptoms and feelings, in his own words, is very interesting.—Vide History of England, vol. i. Introduction, p. xix.

tention of which will carry death into the very vitals. We frequently see fatal bowel complaints produced by this cause, and it is no uncommon thing to discover that drastic purgatives have been employed. Not long ago, I was called to see a child under a fortnight old, who was taking half a grain of calomel and two grains of scammony twice a-day, although it had from fifteen to twenty stools during the course of twenty-four hours, notwithstanding the exhibition of occasional doses of chalk mixture. In such cases, the drastic purgatives are given in the first instance to "clear out the bowels," and afterwards persevered in "*to improve the evacuations.*"

Another source of the bowel complaints of children, proceeds from the absurdities constantly committed with respect to their food. Soon after the castor has been exhibited, the nurse insists upon giving food, consisting of thick gruel, which the stomach is totally incapable of digesting; flatulency is the consequence; they cry; and then the nurse flies to Dalby's carminative for relief, which produces ease for a time, but by inducing constipation, renders another dose of castor oil necessary; this in its turn frequently gripes. This the nurse attributes to wind in the stomach and bowels, and again thick indigestible food is given, to drive out the wind, which in its turn again requires the Dalby. In this manner, the functions of the stomach and bowels are too often impeded, and not only impeded for the time, but the children are rendered ever afterwards liable to complaints in the stomach and bowels.

Daily do I see the advantage of pursuing an opposite plan with new-born children. No laxative medicine should be given, unless an infant suffers from distention of the abdomen. Should this be the case, the old plan of using a suppository, or a twisted piece of paper, will in general answer every purpose; but if it should not, then a gentle laxative may be given by the mouth, and the best is a small tea-spoonful of castor oil, or about three grains of Henry's magnesia. With respect to food, an infant ought not to have any thing more substantial than well-made whey, or milk and water, till it can procure food from its own natural fountain.

Some children are so constituted, that, do what we will,

they have more than the natural number of stools, and yet they go on growing and thriving in a remarkable manner. In such cases little or nothing ought to be done, because there is good evidence that there can be no serious disease. Again, some children are naturally constipated, and yet they thrive; in such cases, also, much interference is unjustifiable, beyond changing the milk, or exhibiting a little manna. A healthy child at the breast, ought in general to soil from four to six napkins in the course of twenty-four hours; the evacuations after the first fortnight should look like well-made mustard, with perhaps white specks here and there; it should have a sour smell, and possess no fetor. In disease, the stools are sometimes green and watery; sometimes yellow and watery; sometimes brown and frothy, or white and frothy, as if mixed with yeast; and also whitish and hard, like half-baked clay; occasionally blueish, and very often mixed with slime, or are altogether slimy. When the stools are blueish, and particularly when whitish, like half-baked clay, they are very adhesive, and expelled from the bowel with difficulty. Instead of having the natural sour smell, they are like the stool of an adult; or they may have a still worse smell, sometimes compared to rotten eggs, at others to train oil; and occasionally even still worse, like that which emanates from a gangrenous sore. Green and brown stools are generally watery, or mixed with mucus, and are occasionally discharged, when the child is held out, as if they came with violence from a squirt, and are often preceded by considerable signs of suffering.

The blueish and the whitish stools are generally few in number, but are attended with consequences fully as dangerous to the infant, as they terminate by producing diarrhœa of the most intractable nature. In many of these cases, the diarrhœa alternates with constipation; and occasionally there is so much irritation in the rectum, that prolapsus ani takes place, attended with great suffering.

Many children go on thriving remarkably well, having a regular state of bowels till they are weaned, when, from the sudden change of food, a serious disturbance is occasioned in the stomach and bowels, announced by vomiting and purging, or by purging alone, the stools consisting at first of feculent

matter, then mixed with mucus, and perhaps tinged with blood; and subsequently of a white serous fluid, like dirty water, which is discharged suddenly, and squirted with violence from the bowels. Children so affected are said to have the "weaning brash," which has some resemblance to the true cholera.

Treatment.—If the disease be produced by the injudicious use of laxatives, these are to be discontinued or diminished in quantity, and conjoined with a slight opiate, as, for instance, a quarter or half a drop of laudanum in a tea spoonful of a solution of manna. If from indigestible food, it is to be withdrawn, and the child must subsist entirely upon the breast. If there be good evidence of its own milk disagreeing with it, another nurse should if possible be procured. Green stools are often occasioned by the exhibition of calomel, which is too frequently allowed to be prescribed by nurses themselves. The yellow watery stool, and the brown watery stool, often announce an excess of bile; while the blueish and whitish stools, but particularly the latter, indicate a diminished quantity of bile. In the former cases, a little thin arrow-root, one small dose of calomel, followed by a little castor oil, and an occasional tea-spoonful of chalk mixture, together with the warm bath, will be all that is required. But in the latter cases, five or six half-grain doses of calomel, or one grain doses of hydrargyrus cum creta, given either at night or in the morning, followed by an occasional small quantity of castor oil, and attention to the diet, will be sufficient to put the child in a fair way of doing well. According to my experience, a mercurial preparation is particularly necessary when the stools have the peculiar disagreeable odours formerly described. If much mucus be discharged, particularly if tinged with blood, and expelled as if it came from a squirt; if there are fever, restlessness, peevishness, and thirst, and particularly if the child cries much and emaciates, medical men should be upon their guard, for if inflammation of the mucous membrane do not already exist, there are evidences of its being threatened. Solid food should be carefully avoided; and if the child be already weaned, it should be offered nothing but whey or ass' milk. The warm bath is to be used morning and evening; and I have found powders composed of calomel, aromatic powder,

and Dover's powder, with or without rhubarb, proportioned to the age of the patient, highly useful. To a child of three months old, I would give half a grain of calomel, the same quantity of Dover's powder, and two of aromatic powder, every three, four, or six hours; to a child under that age, a somewhat smaller quantity of Dover's powder may be given, and it should be increased to those who are older. If the feverish symptoms still continue, a leech should be applied, or a stimulating embrocation rubbed upon the abdomen. It is always safe practice to apply a leech early, which is not only justified, but loudly demanded, by the appearances on dissection, when the mucous membrane is seen, not only in a high state of inflammation, but also of ulceration. My Museum contains many specimens and drawings of such morbid changes.

Sometimes we are not consulted till the little sufferer is greatly reduced, and it should be remembered that its vital powers may sink early, from the peculiar severity of the disease. In such cases, we must be guided by the expression and colour of the face, state of the pulse, and the temperature of the body. If the expression be subdued, the face pale, the features sharpened, the extremities and tip of the nose cold, and the pulse weak, a stimulant is instantly to be given, and the best one is brandy and water, proportioned to the age of the child; it may be necessary to conjoin an opiate with the stimulant. The warm bath is also to be had recourse to.

TABES MESENTERICA.

This is a disease in which there is great emaciation of the whole body, and enlargement of the abdomen.

After the bowels have been for some time in an irregular state, the child is observed to fall off very much in strength; the extremities and the face becoming much emaciated, while the belly is observed to be tumid; the appetite is fastidious, sometimes ravenous; there is great thirst, and frequent griping pains. A child so affected has some degree of fever, while another has no feverish symptom; but most commonly there is a febrile attack during the night, which goes off towards morning with perspiration. The abdomen feels doughy and knotty, at

other times tense and tympanitic. At first the tumefaction is owing to flatus; but as the disease goes on, effusion takes place into the cavity of the abdomen; there is constant purging, till at last the child dies exhausted, or is carried off by disease in some other part, commonly of the brain or lungs.

Appearances on Dissection.—On dissection we sometimes discover chronic peritonitis, with enlargement of the mesenteric glands; but more frequently ulcerations of the mucous membrane of the bowels, the effect of long-continued subacute, or chronic inflammation. The whole of the internal surface of the colon is sometimes ragged; the rest of the coats of that intestine being, in general, very much thickened; at other times, the lower parts of the ileum and cæcum are affected; and occasionally ulcerations are seen in the jejunum, increasing in number, however, in the course of the ileum. Occasionally, when there is chronic peritonitis, I have been able to trace it to the extension of the ulceration from the mucous coat of the intestine.

Treatment.—The pathology of this disease appears not to be understood by the generality of practitioners. It is too often attributed to scrofula, merely because the mesenteric glands are known to be enlarged; therefore the muriate of lime is extensively employed by those who are *calcined* in old prejudices, and who are blessed with so much patience, that three years is not considered too long a period to wait for its good effects. The disease should be treated as one proceeding from inflammation and ulceration of the mucous membrane of the bowels, which will also be the best practice, should the disease be found occasionally to depend on chronic inflammation of the peritoneum.

DYSENTERY.

This affection is known also by the name of flux; when attended with a discharge of blood, bloody flux.

Dysentery is generally divided into two varieties,—acute and chronic.

Symptoms of Acute Dysentery.—This form commences like

a common diarrhœa, with griping pains in the bowels; frequent calls to stool, with an irresistible desire to strain; the evacuations are sometimes fluid and copious with the usual fetor; at others scanty; and whether copious or scanty, there is occasionally seen, particularly in this country, some hard scybalous matter, with mucus, sometimes streaked with blood, and very fetid. In warm climates it is rare to see scybalæ; when there is feculent matter, it is very watery. After a stool, the patient feels more or less relieved, but soon another paroxysm of pain, frequently amounting to what has been denominated "tormina," takes place, and he may have a great many such attacks during twenty-four hours. In this country, for the first few days, the heat of skin is not much increased, nor is the pulse accelerated; the tongue is loaded, and generally red at the tip; the thirst is urgent; there is loss of appetite; considerable prostration of strength; and depression of spirits.

After the lapse of two or three days, more or less, the patient complains of fixed pain in the hypogastrium, and in one or both iliac regions, which sometimes becomes very distressing; it is increased by pressure, and I have been able to trace it, on many occasions, along the track of the colon. Sometimes there is universal heat of skin; at others, the abdomen only will feel burning to the hand, while the rest of the body is cool; nay, the extremities may be ice cold, and the patient may complaint of frequent rigors. The evacuations from the bowels, at first feculent and copious, now become more frequent and scanty, consisting entirely of mucus, or of mucus mixed with blood; or they may be still watery, and of a dark brown colour, with portions of slime here and there; or they may have the appearance of dirty water slightly tinged with blood, with now and then a little scybalæ. The stools become more and more disagreeable in odour, till at length an experienced person will be able to recognize the smell to be dysenteric upon first entering the room. The tenesmus is more distressing, together with a cramp-like feel in the thighs and legs, which is relieved after each evacuation; it is with difficulty that the patient can be persuaded to leave the close-stool, and to lie down in bed. The secretion of urine is frequently

suppressed, and the patient suffers a good deal of pain from that cause. Thirst increases; cold water is preferred, from which the patient cannot refrain, although he knows it is bad for him. The tongue is more loaded and florid; or it has by this time become dry and glazed. The skin is either parched, or covered with copious perspiration, which, in the worst cases, does not appear to mitigate the symptoms, although some relief is experienced in slighter instances. When the skin is universally hot and parched, the pulse in general will be found quick, full, and bounding, but when the extremities are cold, it will perhaps feel weak and thready; yet, in some instances, the pulse is not much changed from its natural state, neither are the other symptoms troublesome, till within twenty-four hours of death.

Sometimes the patient preserves some degree of appetite for a few days; but in the course of two or three hours, the articles of food are passed by stool in an undigested state. The patient emaciates quickly; the despondency increases; and as the disease advances, his bodily weakness increases, till at length he is unable to obey the frequent calls to go to the close-stool. He lies upon his back, unable to move, and at length passes his stools involuntarily, which appear as if mixed with shreds of membrane; occasionally they resemble pease-soup, and sometimes are even like pure pus; or they still continue to consist of mucus, more or less tinged: the bowel is constantly in a state of protrusion, and the fetor which emanates from the patient is almost intolerable. In warm climates, I have seen an appearance as if large portions of the mucous membrane had been thrown off in a state of mortification, and I knew one patient recover after such an event. Sir George Ballingall and others mention a similar circumstance as having occurred in their practice; but recovery in this stage is almost out of the question. The pulse sinks; the pain ceases; and the mind, which perhaps has hitherto been quite clear, now becomes disturbed; a cold clammy sweat takes place, and death shortly closes the scene. Hiccup and vomiting are occasional symptoms; and during the progress of the disease, the symptoms frequently undergo remarkable remissions, which excite hopes of recovery. I

have seen the strongest men destroyed by this form of the disease in four days; but in general the case is protracted for two or three weeks.

Symptoms of Chronic Dysentery.—This form is rarely met with in this country, unless in individuals who have come from warm countries, where they had suffered frequent attacks of the disease. In chronic dysentery, patients are affected with severe fits of griping about the umbilicus, like colic, which are quickly followed by an irresistible desire to go to stool, when a great deal of flatus is discharged, along with an evacuation which is sometimes of a dirty brown feculent matter, sometimes even much darker in colour; at others it is greenish or yellowish; and occasionally the stool looks yeasty, or resembles thin gruel; sometimes, according to Mr Marshall, like rice water, or water in which a small proportion of white clay had been diffused. Sometimes there is only a sense of weight in the abdomen, and acute pain is perceived, upon pressure, in the course of the colon, but more particularly in the situation of the caput cæcum. After each paroxysm of pain, and subsequent stool, the patient enjoys a longer or a shorter interval of ease, unless he be scalded about the anus. The skin becomes parched, and the pulse quickened; the appetite is impaired in some cases, while it remains good in others; but the patient will be observed to be worse after a moderately full meal, and occasionally there is nausea. Thirst is a pretty constant companion. The tongue presents various appearances, sometimes loaded, the fur being of a yellow colour; at others it is loaded in the centre, and reddish at the tip; sometimes rough, and often it has the appearance which has been already described in this work, red, raw-looking, and quite smooth as if glazed. After these symptoms have continued from two or three to twelve or fourteen days, the stools are found to consist of whitish mucus, frequently mixed with undigested food, and are almost always passed with considerable straining; the paroxysms of tormina increase; borborygmus is troublesome; the patient loathes food more and more; nausea is more complained of, and bilious vomiting occasionally takes place; thirst increases, as well as debility and emaciation; hiccup is often

very troublesome; and the pulse becomes quicker and quicker, gradually losing its strength, the skin looks sallow, and at last death takes place. In the latter stages, the abdomen sometimes becomes more tumid; at others, it is flatter than usual. Occasionally acute peritonitis cuts off the patient, from the escape of the contents of the bowels into the abdomen through an ulcerated opening.

Appearances on Dissection, with Pathological Remarks.—In this country dysentery is rarely fatal, unless it attacks individuals who have suffered severely from the same complaint in India. Nevertheless, my Museum contains sufficient proof that it is sometimes fatal, and that the *post-mortem* appearances closely resemble those which are found in tropical climates. I have known several fatal cases in Edinburgh, which ran their course in from nine to twenty days, and in which the colon, the rectum, and part of the ileum, were in a state of complete mortification, the parts having the gangrenous fetor. In other instances, the colon and rectum, throughout their whole extent, were thickened and contracted; the mucous membrane being soft and spongy, and dark coloured, looking more like a livid fungous excrescence than an ulcerated surface; the colour being retained even after maceration. An opinion has been too prevalent, that dysentery is always connected with a vitiated state of the bile, or actual disease of the liver itself; but the writings of modern pathologists have dispelled such delusions.

Sir George Ballingall, in proceeding to give an account of the appearances found on dissection, in his excellent work on Fever, Dysentery, &c. states, that in a great proportion of cases these appearances consist of an inflammation of that part of the intestinal tube situated below the valve of the colon, "without the smallest trace of disease in the structure of the liver."

The following are the appearances described by Mr Marshall, Deputy Inspector General of Hospitals, in his valuable work entitled, "Notes on the Medical Topography," &c. &c. I have great satisfaction in quoting from this author, because I know his descriptions were drawn from nature when standing at the dissecting table, with the morbid parts before him, and not

copied from books:—"Upon examining the bodies of Europeans who have died of dysentery, (says he) the extent of structural derangement discovered is often very great."

"*Omentum.* This organ is sometimes found greatly diminished; more frequently it is found much thickened, interspersed with numerous vessels turgid with dark-coloured blood, and easily torn. Sometimes it adheres with great firmness to the intestines, occasionally stopping up ulcers. Perhaps it adheres more frequently to the cæcum than to any other portion of the intestinal tube.

"*Intestines.* The folds of the intestines are often found agglutinated together. Sometimes they adhere to the liver, and occasionally to the bladder. The colon appears studded or streaked with dark red or plum-coloured spots. Sometimes the contents of the intestinal tube are found in the cavity of the abdomen, having passed through a gangrenous orifice in the coats. When handled, the large intestines feel thick, heavy, and lumpy; they are likewise, in many instances, easily torn.

"Upon removing the intestines from the body, and slitting them up through the whole extent, a great number of lumbrici are commonly found; but as worms exist so generally in the intestines of Europeans in this country, their appearance cannot be considered as connected with dysentery. The inner surface of the duodenum is found covered with a viscid, glairy, semi-fluid substance, which has sometimes a yellowish, sometimes a greenish colour. Towards the inferior half of the ileum, small quantities of fecal matter are occasionally found, having a bright yellow colour, and some degree of consistence. The contents of this intestine frequently resemble the healthy alvine evacuations of young children. The colour and consistence of the fecal contents of the ileum are suddenly changed immediately upon passing into the cæcum. Nothing is ever found in the large intestines but a brownish offensive fluid, similar in appearance to the watery dejections which mark the last stage of dysentery. The intestines were never found to contain either scybalæ or fecal accumulation.

"The coats of the small intestines are generally healthy; sometimes they are redder externally than natural; this red-

ness appears to originate from venous effusion, rather than from an actively excited state of the vascular system.

" The mesocolon is frequently found much thickened, and containing a great number of vessels gorged with blood.

" The chief traces of disease are found in the large intestines. The villous coat of the cæcum, colon, and rectum, when expanded, sometimes appears dark red, and extremely turgid ; the turgescence is occasionally so great, as to resemble the tumid state of the inflamed conjunctiva during a violent degree of purulent ophthalmia.

" Sometimes the villous coat appears, at a little distance, to be covered with a blueish puriform fluid, and thickly interspersed with dark grumous spots and patches. When more narrowly examined, the villous coat is found to owe the appearance of being covered with puriform matter to an extravasation of fluids into the substance of it, by which means it acquires a swollen and pulpy appearance. The dark red grumous patches are portions of the villous coat in a gangrenous state. These spots are generally surrounded by a red circle, the areas of which are various ; frequently they are not more than about a third of an inch. Sometimes an individual slough may be compared to a tainted oyster. The mortified portion of the villous coat that is situated within the red circle is easily removed from the muscular coat, which is commonly found apparently not changed from a state of health. In some instances, the central portion of the slough had disappeared, leaving an excavation in the villous coat, as if a portion of it had been cut out. Even in these cases, the muscular coat was commonly sound. The villous coat was generally unattached at the margin of the excavation, and the finger could often be easily pushed under it from one depression to another. Sometimes, however, the sloughing extended into the muscular coat, and even into the peritoneal coat, which was rendered evident externally by the mulberry-coloured patches. The dark spots on the peritoneal coat are always much less extensive than the corresponding gangrenous portions of the mucous membrane. While one part of the large intestines has lost its natural tenacity from gangrene, another has sometimes acquired an increased power of resistance, and

when cut into, conveys a semi-cartilaginous feeling to the hand. Sometimes large portions of the villous coat are found sphacelated without any intervening living parts. In these instances, it is extensively separated from the muscular coat, and is sometimes found loose in the cavity of the intestine. The gangrenous shreds occasionally stretch across the diameter of the intestine, like a bow-string. The separated portions of the villous coat are torn by the slightest force. They resemble, in appearance, pieces of dirty lint imbued with the ichorous discharge of a gangrenous ulcer.

" Sometimes small collections of purulent matter are found between the villous and the muscular coats. This is, however, not a frequent occurrence.

" Occasionally dysentery leaves traces of disease in the large intestines of a different kind, namely, tubercular ulceration. Ulcers of this character are not unfrequently found spread over portions of the villous coat, and, for the most part, in a remarkably distinct and uniform manner. That portion of the villous coat which intervenes between the ulcers, has in general a loose, pulpy appearance. Sometimes it is turgid and reddish. Viewed at a little distance, the inner surface of the intestine appears to be sprinkled with a soft, curdy-like substance. These cream-coloured specks are of various sizes ; sometimes they are not more than a line, at other times they are an inch in diameter. Upon examining a small speck, the whitish substance is found to protrude a little beyond the surface of the intestine, and adhering, but not very firmly, to the villous coat. After removing this substance, a depression or incipient ulceration is exposed. The base and margin of the indentation are generally dark red. The depression eventually increases, and becomes an ulcer, which is always encircled by a red portion of the villous coat. Sometimes the ulcers resemble the ill-conditioned sores, with prominent edges, which occasionally occur on the inside of the lips, particularly during a severe course of mercury. In general, the base and edges of the ulcers are indurated, unequal, and scabrous. When the transverse section is made, a gristly feeling is communicated to the hand. The tubercular appearance of these ulcers is very remarkable. They sometimes resemble warty elevations

with excavated apices, in a state of ulceration. For the most part, ulcers of this kind are oblong: in length, they extend from half an inch to an inch; the breadth is seldom above half the length. The longest diameter is always in a transverse direction to the cavity of the intestine.

"Such are the more common traces of disease found upon inspecting the bodies of individuals who have died of dysentery, more particularly among Europeans. Death rarely, if ever, occurs among this class of people before a certain degree of gangrene of the villous coat of the large intestines has taken place.

"Abscesses and other morbid states of the liver are occasionally concomitants of dysentery. When traces of disease in the liver were discovered on dissection, the circumstance is noted in the table of casualties. The nature of the structural changes of this organ has been already mentioned. Upon examining the bodies of Malays that have died from dysentery, traces of disease of a less active character are discovered. The mesentery and meso-colon are generally found massy and dark-coloured, from turbid blood-vessels and the lymphatic glands greatly enlarged. The coats of the large intestines are thickened and firm; frequently the calibre of the intestine is greatly contracted. The villous coat is, in these cases, unequal, puckered, and covered with a gelatinous muco-purulent substance. Occasionally, however, instances occur where the inner surface of the colon is found sprinkled with grumous spots in a state of mortification, and sometimes the sloughing portions are extensive."

Some years ago dysentery was very prevalent and fatal in Ireland, which afforded Dr Cheyne and others the most extensive opportunities of making *post-mortem* examinations. They had the best proof that the primary and chief seat of the disease was in the mucous membrane of the intestines; the liver was sound in a majority of cases, but often otherwise. In two instances abscesses were found, and in many others great sanguineous congestion.

According to Dr Cheyne, the intestines were variously affected; in some cases they were prodigiously distended; the small intestines measuring from seven to nine inches in cir-

cumference; in some the coats were much injured without thickening; in others considerably thickened as well as ulcerated. In some cases the inflammation of the mucous membrane was most extensive, extending from the stomach to the rectum; the inflammation being always greatest towards the large intestines, the rectum being, however, sometimes sound.

The morbid appearances discovered in the intestines in fatal cases of dysentery, in this country, are considerable thickening of the large intestines; sometimes this thickening affects the whole colon and rectum; sometimes it is confined to the caput cæcum and part of the ascending colon, at others it involves also the arch, and even extends farther. The peritoneal coat generally remains sound. The seat of the thickening is in the mucous coat and sub-mucous cellular tissue, which are infiltrated with blood, spongy with a rough and ragged surface. The colour varies from bright red, to a dark brown.

On other occasions the mucous surface is spongy, rough, and ragged, with deep ulcerations here and there; the ulcerations running principally in the course of the transverse bands of the colon. The colour is sometimes very little changed, and there is little or no infiltration of blood into any of the tissues.

I have likewise seen complete mortification and sloughing of the mucous membrane in two dissections. In these instances, there were large detached portions of the membrane, the sloughing condition being sufficiently well marked by the colour and fetor. The rectum has been implicated in a variety of the cases that have fallen under my observation, but it escapes more frequently in this country than in warm climates. There are some specimens and drawings in my Museum, from which this description has been taken.

Causes.—Dysentery is a disease which attacks individuals of all ages, and all classes of society; although those are more liable to it who are most exposed to vicissitudes of climate, and who are badly fed and clothed. Irregular habits also predispose to this disease. In warm climates it is found that Europeans suffer more than natives. Upon inspecting Mr Marshall's tables, it will be seen that the disease is fatal during every month in the year; therefore it must occur in all kinds of weather. It is more peculiarly a disease of tropical cli-

mates; although we often see it in other situations, yet it is neither so prevalent nor so fatal. It also seems to depend upon the same exciting causes as fever. Although diseased secretion of the bile may occasionally produce both diarrhœa and dysentery, yet these diseases ought not to be so invariably imputed to this cause.

Treatment.—The method of treatment which is generally found necessary in this country, shall be first shortly stated; and then that which ought to be adopted in warm climates in the acute and chronic form of the disease.

1*st*, *Treatment of Dysentery as it occurs in this country.*—The same plan is to be pursued as in severe cases of diarrhœa. The body is to be warmed in a hot bath; and as we are anxious to get rid of any offensive matter that may be in the bowels, in the first instance, an ounce, or half an ounce, of castor-oil is to be given, with twenty, thirty, or forty drops of the sedative solution of opium; but if the stomach be too irritable to bear the castor-oil, calomel, with a small quantity of opium, is to be given in pills every second, third, or fourth hour, till a feculent evacuation is procured, assisted by a large injection of warm milk and water, or thin gruel; or small doses of salts may be given by the mouth, and repeated at short intervals. It is wrong to suppose, that in all instances of dysentery in this country, there are hardened feces lodged in the bowels; but as this is sometimes the case, and certainly more frequently than in warm climates, the plan above recommended should in the first instance be adopted. This points out the necessity of a careful examination of the alvine evacuations, which has been already so much insisted upon in other diseases.

If, however, a patient have considerable griping and tenesmus, hot skin, and a quick pulse, although it may not be particularly strong, it will be right to bleed him, especially if there be pain on pressure; and perhaps it will be safest to draw blood before the laxatives are administered. One good bleeding will in general suffice; if there be much subsequent tenderness of abdomen, leeches may be had recourse to. After the diseased action has been thus reduced, and the scybalous matter got rid of, we may have recourse to large opiates by

injection. It appears to me that the reason why opiates are not attended with more success, is that they are exhibited in too small quantity, and that they do not proportion the dose, in any degree, to the violence of the symptoms. If we suspect the liver to be disordered, small doses of calomel or blue pill may be given, but there is no necessity for greatly affecting the mouth.

Contra-irritation to the abdomen is to be had recourse to, and the best method of producing it, is by the frequent application of hot oil of turpentine; but should the disease be very severe, it will be advisable to apply a blister. The attendants should be particularly cautioned to watch the heat of the extremities, and to apply hot bottles when necessary.

In the excellent clinical reports with which Drs Stokes and Graves have lately favoured the profession, it is stated, that strychnine, in doses of one-twelfth of a grain, given in a pill twice a-day, was found useful in the Meath Hospital. They tried this remedy on the authority of a paper by Dr Rummel inserted in the June Number (1825) of Hufeland's Journal. On some late occasions this remedy has been tried in my practice, and was found exceedingly beneficial, even in cases where there were most extensive ulcerations in the bowels. It succeeded after every other remedy had failed. I have also seen beneficial effects from the acetate of lead, given in two or three grain doses several times a-day. The sulphate of copper has also been strongly recommended in such cases by Dr Elliotson; I have given it a trial, and can speak rather favourably of the result.

The sufferings of patients are often much aggravated by flatulent distention of the intestines, which may generally be relieved by turpentine, assafœtida, or tobacco injection. During convalescence, the greatest attention must be paid to diet, clothing, and exercise.

2*d*, *Treatment of the acute disease as it occurs in warm climates.*—The only difference which is to be kept in view between the treatment of the disease as it occurs in this country and in tropical climates, is, that the disease being in the latter more severe, requires more active practice. It is also necessary to impress on the minds of those who are destined

to practise in warm countries, that cases are frequently fatal, although the symptoms are apparently mild. That such cases are frequent, any reader may satisfy himself by consulting the works written upon this subject; and it has led some to divide the disease into two varieties. For instance, Mr Annesley states that there are two varieties, the acute and erythematic. "The first," says he, "is acutely inflammatory, and if not checked by bold and decided practice, will very soon terminate fatally, or lay the foundation of that chronic stage of dysentery which disables so many men. The second is more obscure, and consequently more dangerous. There is dull, deep-seated pain in the bowels, sufficient to distress a patient, but not so severe as to excite alarm. There is no external pain, the pulse is not materially altered, neither is there any increased febrile action. This disease," continues he, "is confined to the mucous membrane of the colon, and consists of a less acute form of inflammation of this membrane. If not treated successfully, it runs at once into ulceration throughout the whole intestines."

These extracts are taken from Mr Annesley's octavo work, which contains much valuable information. It appears to me, however, that the term erythematic is most unhappily chosen, at least in contradistinction to the first variety, as the inflammation in both cases may be said to be erythematic.

Great prejudices have prevailed in India, and I fear still exist among the older practitioners, against the employment of general bleeding both in fevers and dysentery; and the action of calomel is too much trusted to in these diseases. Dr Johnson and Sir George Ballingall were among the first who, by example and precept, endeavoured to root out this error, by an appeal to the morbid appearances which have been already described. In later times, we have received additional testimony of the advantage of general bleeding. Mr Annesley, in detailing the treatment of the acute form, when it occurs in plethoric individuals, recommends general bleeding, and states, that much is to be done in a few hours, and if it be not got under controul in that time, the patient is either lost, or the basis of a broken constitution is laid. But in those who have been long in India, and, I suppose he means,

who have shattered constitutions, he says leeches will answer better, because they "diminish action without destroying power; and any quantity of blood may be taken by them." I cannot agree with this too sweeping statement; for I am certain, by experiment and careful attention, that individuals will bear the loss of blood better, ounce for ounce, by general bleeding, than by leeching. The cause of this remarkable circumstance cannot be determined, although it appears probable that it may in part be attributed to the long-continued unpleasant sensation produced by the biting of the animals, and to the fatigue of the operation; but I am satisfied of the fact. Leeches are certainly to be preferred, however, when the disease is of long standing; they operate beneficially in many cases, when general blood-letting would no doubt prove injurious. Two great advantages which the lancet possesses over leeches, are, that we can stop the bleeding from a vein in a moment, and promptly alter the determination of blood.

At page 278. of Mr Annesley's octavo work, the following passage will be found:—"Full doses of calomel, with such other purgatives as act upon the mucous glands, are required here, and should be continued without intermission till healthy action is produced." To those who have seen the morbid changes produced on the intestines, who know and are acquainted with the dreadful mortality which is caused by dysentery among Europeans, and who have seen individuals reduced to premature old age sent to this country on the pension list, will join me in stating, that much injury has been inflicted by the mercurial treatment too generally pursued by medical men in the East; and upon which the passage last quoted affords me an opportunity of commenting. At this moment, I have before me the detail of many cases, which have been corroborated by frequent communications with practitioners who have served in India, of the baneful effects of the practice which seems still to be inculcated by Mr Annesley.

It is the custom in India to give calomel in large and frequently repeated doses, which is followed by the daily exhibition of drastic purgatives, which are given, to use Mr Annesley's words, "to act upon the *mucous glands*, and are to be continued without intermission." Under this treatment, the

proportion of deaths is sometimes so great as 20 per cent. and on some occasions, it has been known to be about 30 per cent. Thus, Sir George Ballingall has shewn, that in his Majesty's 59th Regiment, during eight months of the year 1806, ninety-seven men were affected with dysentery, of which number twenty-eight died. In his Majesty's 30th Regiment, during seven months in 1807, four hundred and ninety-one men were affected with dysentery, of whom eighty-five died. And in the Royals, during eight months in 1808, five hundred and forty-one men were affected with the disease, of whom ninety-eight died. I have also some details of the result of the mercurial practice in India, in my possession, which shew the enormous quantities of calomel exhibited in dysentery of late years, with the bad success of the practice. It is no uncommon thing for an individual to take three hundred grains of pure calomel, before he dies under the digestion of it. One individual took the enormous quantity of five hundred and twenty-three grains; another, six hundred and ninety-five; a third, seven hundred and sixty; and a fourth, nine hundred and seventy-four, which last is somewhat more than sixteen drams! So far from curing inflammation and ulceration of the mucous membrane of the bowels, there is no plan more likely to produce these states; but it is doubtful, whether the calomel or the continued use of drastic purgatives is most injurious. The generality of purgatives operate by producing irritation and increased secretion on the whole mucous surface, which ought to be carefully avoided. It appears that many practitioners act upon the principle of getting rid of the mucous discharge, as if it were lodged in the bowels, acting like a poison; whereas it is to be regarded as the effect of increased action. Let it not be supposed that I object altogether to the use of calomel; on the contrary, I believe that, combined with opium, its occasional use is most advantageous. My observations are only intended to prevent our trusting entirely to its operation, and to guard against its abuse. I shall conclude, by quoting the result of Dr Cheyne's experience in the treatment of dysentery, with respect to mercury, stated in the Dublin Hospital Reports, and that of Mr Twining in the General Hospital at Calcutta. "Mercury," says Dr Cheyne, "could

not be depended upon, and did not relieve in numerous instances when the mouth was affected, and sometimes seemed to increase the disease; and even when the symptoms distinctly pointed out a morbid organization of the liver, the result of this treatment was unsatisfactory." My own experience in this country, as well as within the tropics, enables me to confirm the above statement.

Mr Twining, to whose talents and industry medical science stands deeply indebted, recommends V. S. and the application of leeches, to decidedly reduce and permanently keep down any frequency and hardness of the pulse. He perseveres in this practice as long as pyrexia exists, or pressure on the belly gives pain, or there is any blood in the stools. He gives a laxative, and then six grains of ipecacuanha powder, with four grains of pil. hydrarg. He rarely uses calomel.

" Notwithstanding all that has been written," says Mr Twining, " in praise of the general employment of large and repeated doses of calomel in the dysentery of India, whether that medicine be used to the extent of producing salivation or not, it will be easy to shew, calomel is often not only useless, but in many cases of the dysentery of Bengal, it is exceedingly injurious. I speak without hesitation on this subject, from having too often seen the fallacy of trusting generally to the effects of calomel for the cure of severe acute dysentery, and having tried that medicine extensively, in every form of the disease." *

Treatment of Chronic Dysentery.—It must always be recollected, that no case of dysentery is to be regarded as altogether hopeless. From the recoveries which I have seen made, and from the dissections at which I have been present, of individuals who have been long afflicted with the disease, it may be stated as a fact, that the mucous surface heals and becomes restored, if not to its primitive healthy state, at least in such a degree as to preserve life for many years. It is rare in chronic dysentery that we shall be called upon to take blood from the arm, but the occasional application of leeches is most serviceable, together with contra-irritation, gentle laxatives, an occasional opiate, and astringent medicines, such as catechu,

* Vide Diseases of Bengal, by William Twining, Esq. page 40.

and solution of sugar of lead, and sulphate of zinc. Great care must be taken of the bowels and the diet; small quantities of light and digestible food are to be allowed at each meal, and the patient should not be permitted to eat oftener of any thing than once in five or six hours. I have been very successful in the treatment of chronic dysentery, by following this plan, together with an occasional warm bath, and long perseverance in the use of tartar-emetic ointment, as well as by the occasional employment of mutton suet boiled in milk, which is to be strained immediately after it is taken off the fire; sugar is then to be added, with a little spice to make it palatable; about four ounces of this are to be taken once or twice a-day, mixed with rice,* if the patient's stomach will bear it.

CHOLERA.

This term, together with its adjunct, "*Morbus*," is employed, even in common language, to express that a person is affected with vomiting and purging.

This disease presents itself to us in two forms: 1*st*, That which has been so long known in this climate, and which occurs so frequently in warm seasons, more particularly when fruit is plentiful, and which is called *Cholera Morbus*. 2*d*, That form which so long prevailed in the East, and has lately visited Europe, which has obtained the name of *Asiatic Cholera*.

1*st*, *Cholera Morbus*.—The disease usually presents the following phenomena. The first symptoms are, nausea and griping sensations, which, generally speaking, come on suddenly, and soon terminate in vomiting and purging. In very severe cases, the body, and particularly the extremities, become cold; the breathing is anxious and hurried; the features shrink; the eyes become hollow, with an expression of great

* This is an old remedy; it is mentioned by Sir John Pringle.—The patient should in general be kept ignorant of the nature of the preparation, for fear of exciting disgust.

anxiety in the countenance; the pulse small and contracted, soon becoming so weak as scarcely to be felt at the wrist; the thirst excessive; cold water is the beverage most preferred, which is no sooner swallowed than rejected. A cramp-like feel is complained of in the legs, and sometimes in the arms, as in the severer cases of diarrhœa and dysentery, and occasionally spasmodic contractions of the muscles of the abdomen take place. The discharge from the bowels, in this country, is generally watery, with very thin and offensive feces. Occasionally the discharge looks like water in which meat had been soaked; at other times, dark bilious matter is passed in the first stage of the disease, both upwards and downwards, and subsequently the watery discharge takes place.

Sydenham, in treating of the symptoms of cholera, which prevailed in London in the year 1669, states, that they "often destroy the patient in twenty-four hours."—(Swan's Ed. p. 147.) The following case of cholera proved fatal in Dublin in thirteen hours, for the history of which I am indebted to Mr Marshall.

"Private Dickie, 26th Regiment, aged 19, was brought to the hospital on 13th August 1826, in a state of great exhaustion, labouring under violent vomiting and purging, with which he had been attacked about an hour previously. He is also affected with severe spasmodic action in the bowels, and cramps in the legs; the matter vomited is bitter, and has a dark-green colour,—that passed by stool, has a dirty grey appearance: face and extremities of a livid hue, cold and clammy; no pulse at the wrist; the action of the heart is very obscure; articulates with difficulty, and moans incessantly; he cannot protrude his tongue; eye-lids half closed; appears on the point of expiring, and he died before the lapse of twelve hours from the time of his admission, notwithstanding the adoption of the most judicious practice.

"The only probable cause ascertained, is the drinking a quantity of porter before going to bed last night, but not to intoxication."

Causes.—The causes are similar to those which produce other bowel complaints; as cold feet, suppressed perspiration from sudden exposure to cold, cold drinks when the body is

much heated from exercise, crude vegetables, fruits, constipation, &c.

Cholera prevails in this country chiefly in the autumn months succeeding to hot summers. In 1808, many very bad cases fell under my notice, and again in the autumn of 1825.

Treatment.—An emetic, consisting of a tea spoonful of mustard, in a large tumbler of warm water, is often serviceable, when a suspicion is entertained of acrid matter in the stomach, whether it be vitiated bile, or indigestible food. Fomentations should be applied to the abdomen, and the extremities warmed. It is too much the practice to exhibit strong purgatives in such cases, with a view of assisting nature to expel quickly offending matter from the intestines, but I could never convince my mind of the propriety of such a proceeding, when the evacuations are already so numerous; on the contrary, it always appeared to me that opiates are indicated, and experience has convinced me of the necessity of this practice. Opium ought to be conjoined with calomel, in the proportion of two grains to three or four grains of opium, for an adult. These two powerful remedies conjoined, are found to allay irritability of stomach better than any other means. The calomel may be of service in improving the secretions, particularly the secretion of bile, if it be disordered. But large and repeated opiates, by the rectum as well as by the mouth, are frequently necessary. Stimulants are always to be exhibited when the extremities are cold, when the countenance and pulse exhibit signs of exhaustion, and when there are much irritability of stomach and pain in the abdomen. In general, brandy, or some other form of ardent spirits, is required.

During recovery, care must be taken to restore the healthy action of the stomach and bowels, by gentle, unirritating aperients, perhaps a short alterative mercurial course, and slight bitters, may be of use. The stimulants should be withdrawn by degrees, and finally omitted as the case improves; and the stomach should not be oppressed too early with food.

2*d*, *Asiatic Cholera.*—This, the most formidable disease of modern times, has obtained several appellations, viz. Cholera

Spasmodica, Cholera Asphyxia, &c. The term, "Asiatic Cholera," is adopted in this work, until a proper pathological name can be given to the disease; every one, even in common life, knows its signification, while the other appellations imply erroneous theoretical views of the nature and seat of the disease, the adjunct "Asphyxia" being quite as appropriate to pneumonia, bronchitis, or fever of any variety. In truth, it might be added to the name of any dangerous disease, as most people die "from want of breath."

Nearly two hundred years ago, a Portuguese named Mandelo, in describing the diseases at Goa, makes the following statement:—"The change of seasons from one extremity to another, is the cause of many diseases among the Portuguese, but the most common are those which they call *Mordexin** or *Mordechin*, (the Hindostanee name for cholera,) which kills immediately,—burning fevers and bloody fluxes, against which they have in a manner no remedy but bleeding." †

Cholera appeared in India in the worst form in which it had been observed by any living individual, in August 1817; since which time it has attracted very great attention. It has also been observed in the islands situated in the Indian seas; more lately, many thousands of the inhabitants of Russia and Poland have fallen its victims, and it has since visited most parts of Europe and America, causing every where the most frightful ravages, and sparing, comparatively, few of those it attacked.

In the former editions of this work, I was necessitated to compile the article on cholera from what were considered the best sources, having never had an opportunity of investigating the disease myself. Since then, I have unfortunately had ample means of seeing the disease, and investigating its nature and seat, having acted as Physician to the Drummond Street Cholera Hospital, in Edinburgh; into which establish-

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* This term has been corrupted into *mort de chien*, as Mr Marshall informs me, by a pun made by Sonnerat.

† Travels into India in 1639, by John Albert de Mandelo, published in London in 1662, with the voyages and travels of the ambassadors, &c. &c.

ment there were received 461 patients, of which number 291 died; of these, 280 were examined most minutely, to ascertain the cause of death.

It was with much reluctance that I accepted the appointment, from a feeling that, having a large family, I had no right to place myself in such a dangerous position. I likewise felt that my health, which was then rather impaired, would break up under the increased demand made upon my time, already too much occupied; and lastly, that my private practice must suffer considerable injury, as few people, when cholera was almost universally believed to be contagious, would send for me, knowing that I might come to them loaded with the contagious virus from the Hospital. With all these feelings against the undertaking, and the urgent entreaties of particular friends, and having, at the same time, neither expectation of reward to myself if I survived, nor suitable provision to my family if I perished, I at last accepted the office; having done so, I made every preparation, even by increasing my establishment of horses, to enable me to perform the duties to the best of my ability. The disease lingered a long time in Edinburgh and its vicinity. The Drummond Street Hospital was in great favour with the suffering poor; on an average, during the eleven months that cholera prevailed, I made seven visits daily, often the number amounted to ten. Every night, with few exceptions, I made a visit between the hours of twelve and two. During the epidemic, I remained in the Hospital, going from room to room, thirty complete nights,—which was sometimes necessary, from the young medical gentlemen being worn out, and also from the drunkenness that too often prevailed among the nurses. With few exceptions, each body was carefully examined after death, with the view of unravelling the mysteries of this dreadful disease, and ascertaining its true pathological character; and, for the most part, these examinations were conducted with my own hands. Two hundred and eighty bodies were opened, and we were generally occupied two hours with each. Twice was I seriously injured by punctures; and on one of these occasions, my life was in jeopardy, from the inflammation spreading along the absorbents, accom-

panied by erysipelas of the whole arm and side of the body. Had I expected any honour or reward for my services, how grievously disappointed must I have been! The epidemic having at length terminated, there was no offer to remunerate me even for the expense incurred in purchasing and keeping an additional pair of carriage horses; there was no letter of thanks, till the circumstance was mentioned to one of the Members of the Board of Health, who went to the office, and desired the secretary "to write a letter of thanks to Dr Mackintosh, and that he could scarcely make it too strong"!! Knowing the irregular and shabby manner in which it was got up, I put no value upon this document; and this is my only reward! Soon afterwards, two vacancies for Physicians took place in the Royal Infirmary of Edinburgh. I will confess I was most anxious to obtain one of the appointments, but felt reluctant to become a candidate, till a memorial was presented to me, signed by almost all the students attending the Royal Infirmary, requesting me, for their sakes, to offer my services. The influential Managers of the Infirmary had been Members of the Board of Health; they all knew, and acknowledged to me privately that they knew, of my great exertions, not only in attending the sick, but in investigating the nature and seat of the disease, and in having mainly assisted in organizing an efficient hospital establishment. But when the day of election arrived, I was passed over; for which I stand indebted to the Honourable Medical Managers. To console me for this disappointment, I had, by calculation, sustained a loss of two hundred pounds by the falling off of my private practice. This is my case, and I take this opportunity of giving it publicity.

Phenomena of Asiatic Cholera, as it appeared in this country.—The disease consists of three stages. The first stage may be called *premonitory;* the second, *the stage of collapse;* the third, that *of consecutive fever.*

The 1*st Stage* is characterised by symptoms of indigestion, flatulent disturbance in the abdomen, præcordial weight or oppression, slight nausea, acidity, griping pains, diarrhœa, vertigo, some degree of headache, or tinnitus. These symptoms, even when accompanied by spasms, are too often either

disregarded or concealed, till the second stage is far advanced. It is most unfortunate, that this reluctance to confess the early part of the indisposition should so frequently exist in all classes of society, but particularly among the poor, because few of the more severe maladies to which flesh is heir are so remediable as cholera in the first stage, and not one more hopeless after the lapse of a few short hours.

It is stated by the Russian physicians, that at Orenberg, Moscow, and other places, scarcely a person escaped, during the season when cholera prevailed, without some disorder of the stomach and bowels,—indicated by nausea, vomiting, and oppression at præcordia, indigestion, pain in the belly, and looseness of bowels. Many instances of disorder of the stomach and bowels prevailed during the epidemic season, and for some weeks before there was a well-marked case of cholera in Edinburgh.

2*d Stage*.—The duration of the premonitory or first stage is various; sometimes the unpleasant symptoms suddenly cease, and the patients recover quickly; but this happy issue is comparatively rare, when proper remedies are not used; and in some few cases, from the peculiarity of constitution of the patient, remedies seem to have little effect in arresting the progress of the disease, even when applied in this early stage. The stools, which were at first feculent and bilious, now become characteristic of the true Asiatic Cholera. They have the appearance of very thin gruel, or rice-water; sometimes they are watery, limpid, with small flakes of curdy-looking matter intermixed; at other times, they present an appearance of water in which fresh beef had macerated. The usual feculent smell has vanished, instead of which the stools have a peculiar odour, which struck me to resemble that produced by macerating fish in water; a similar odour is generally observed from the surface of the body. More rarely, the stools look like the lees of Port wine; and it was remarked, that almost none recovered who passed "Port wine stools;" I recollect at present one recovery only in which there was this appearance,—it was the case of Field, who was saved by saline injection into the circulation. The desire to go to stool is irresistible and instantaneous; tenesmus is great

in some cases, sometimes preceded or accompanied by a sense of heat or griping. The stools are generally very copious,—sometimes, however, scanty; often accompanied by loud discharges of flatus from the bowels. Along with the bowel-complaint, there are burning heat in the region of the stomach, and vomiting of large quantities of a similar fluid from the stomach. The abdomen feels doughy. The thirst is intense, and there exists an urgent desire to drink cold water. The mind, for the most part, remains comparatively entire, but the vertigo and tinnitus increase. Cramps are general attendants,—sometimes confined to the fingers and toes; at other times they affect the muscles of the extremities, and often those of the trunk of the body, more particularly of the abdomen. The urine is generally suppressed, early in the disease. The voice is whispering, the person being unable to speak in any other tone. The respiration, although weak, is often nearly natural in other respects, even at times when the pulse is scarcely perceptible at the wrist; occasionally, however, the breathing is hurried and oppressed, sometimes laborious. The pulse becomes weak and rapid early in the disease, even when the action of the heart is comparatively strong and tumultuous; but frequently both the pulse and action of the heart are feeble. As the disease goes on, both become more and more weak; the pulse is only now and then felt like a "flutter," and often ceases to be perceptible at the wrist for some hours before death. The tongue is cold and shrunk. It is quite painful to a by-stander to watch the restlessness and impatience of the sufferers, who are constantly in a state of jactitation, more particularly when restrained, and when heat is applied. Indeed, they seem to have a horror at, and to suffer pain from, warm applications. The temperature of the body, but more particularly of the extremities, diminishes early in the disease, and goes on sinking. It is often impossible to raise the temperature of the body during life, but the moment death takes place, and for two or three hours afterwards, the body becomes warm,—even the icy coldness of the extremities gives place to a genial warmth. The colour of the hands and feet become changed, more particularly the nails assume a blue appearance; the face often is

similarly affected; occasionally the whole surface presents a blue colour, and, consequently, the second stage has sometimes been termed "the blue stage;" but it is an error to suppose that the blueness is invariable, or that it is an attendant only on the worst forms of the complaint,—the patient who had this appearance more strongly marked than any other, was the one who made the most rapid and the most complete recovery. Blood, drawn from an artery or vein during this stage, flows with difficulty, is of a dark colour, does not coagulate or separate any serum. It remains in a semi-fluid state, and has the appearance which the ancients called "*dissolved blood.*" The surface of the body is covered, for the most part, with a cold exudation, the features and eye-balls shrink, and death closes the scene,—sometimes very unexpectedly, at others the body seems to be long dead, while the functions of the brain are still going on and comparatively entire.

Sometimes the prostration of strength is extreme; but it is my belief, that muscular debility is no part of the disease, till far advanced in the second, or collapsed stage. I have been surprised at the efforts made by patients when they were thought to be near death. Several patients ran to the hospital after seizure, and one walked from Bonnington Bridge, near Newhaven, to Drummond Street, a distance of two and a half miles at least; he was as blue as indigo, and his pulse was so weak before starting, that it could scarcely be felt. The appearance of muscular debility is occasioned by the vertigo, which renders the gait unsteady and tottering, as well as by the dread of motion producing cramps.

Many exceptions might be made to this account of the symptoms in these two stages. Sometimes no premonitory symptoms can be traced. I know of one case, where the person appeared to have died under the effects of the first attack of cramps; he was known to have laboured under slight bowel complaint for several days, but he did not confine himself, and was lying without any complaint on a sofa; he was dressed, and engaged reading. A noise was heard, and he was soon after found on the floor on his face, dead, with the book clenched in his hand, and his muscles rigid.—I have

seen several cases where the urine was not entirely suppressed, and others in which the stools were feculent and bilious up to the moment of death. But those cases are to be regarded as exceptions to the rule, which they do not contravene. The symptoms in this disease, as in all others, must suffer modifications from peculiarity of constitution, previous condition of health, and habits of the patient affected.

The symptoms which present the most unerring characteristics of Asiatic Cholera, are diarrhœa, and other symptoms of disordered stomach and bowels, in the first or premonitory stage. I believe previous diarrhœa may be discovered in at least four out of six cases, and probably exists in all, if the history of each were perfect. Thus, in the city of Albany, U. S., diarrhœa occurred in 282 out of 336 cases; in the remaining 54, it could not be ascertained whether this symptom had or had not existed. In the stage of collapse, there are the whispering voice, great restlessness, characteristic discharge upwards and downwards, cramps, suppression of urine, excessive thirst, weak faultering pulse, weak respiration, coldness of extremities, shrivelled hands and feet, bedewed with a cold exudation. The general blueness, when it exists, is also quite peculiar to cholera. It is remarkable how quickly an extremely collapsed state of the features takes place. The patients appear to dread hot applications. The blood-vessels, on such parts of the body as the temples, where they are comparatively superficial and easily seen, are observed to be full of blood of a very dark colour; even the serpentine branches of the temporal artery can be traced in this manner, and the motion of the blood is very slow.

3*d Stage.*—A large proportion of patients died in the 2d stage; there were few immediate recoveries from collapse, without undergoing the danger and miseries of a consecutive fever, which is now to be described. I shall never forget the joy expressed by all who were watching the first case of cholera in which death did not take place in the stage of collapse. This feeling was increased as the watery diarrhœa, vomiting, and cramps, diminished, and at last ceased, and as re-action became more evident and permanent. Nor shall I attempt to describe the subsequent disappointment, as bad symptoms

arose one after another, to convince us that the patient, although he had made an escape from one set of dangers, was still surrounded by another, which experience speedily proved to us were extremely formidable.

The symptoms that denoted an escape from the horrors of the second stage, were, diminution in the number and quantity of the evacuations, both from the bowels and stomach; cessation of restlessness, thirst, and cramps; increase of the temperature of the body, and strength of the pulse; an expression of animation in the countenance, and a disposition to sleep. Sometimes the stools speedily lost the characteristic watery appearance, and became feculent; but this change was generally gradual. Sometimes the secretion of urine took place early after the re-action was established, but this favourable circumstance rarely occurred so soon. In some cases, after every thing appeared to be going on well, the vomiting and purging suddenly returned, the pulse became weak and quick, and the patient rapidly died.

The phenomena of the third stage presented every appearance of fever; sometimes of that form denominated in this country "Typhus," and in several cases a similitude was easily traced to the last stage of Yellow Fever. In fact, the general opinion that was, and still is maintained, that cholera is nothing but a fever, with violent irritability of stomach and bowels, suppression of the secretions of bile and urine, with a cold stage, appeared to derive support from the resemblance to the phenomena of intermittent fever. But it will soon be in my power to shew how erroneous this opinion really is, when the pathology of cholera falls to be considered.

After the complete developement of re-action, patients for a time appear to be doing very well, not teased with violent tenesmus and vomiting, nor disturbed with intense thirst and violent cramps. The restlessness has ceased, and they seem to be enjoying tranquillity. But this state is generally to be regarded as a calm which is too soon to be followed by a storm. The subsequent symptoms vary much in different cases, depending on the previous state of health and habits of the patient, and his peculiarities of constitution, as well as

on the phenomena of the previous stage, and the treatment pursued.

These symptoms were, lethargy or coma, which were frequent; delirium; convulsions; paralysis; rigidity of the flexor muscles of the extremities; distressing nausea; bilious vomiting, and thirst; dyspnœa, or hurried respiration; cough, expectoration; palpitation and irregular action of the heart, and more or less heat of skin; bilious diarrhœa; Port wine stools; tenesmus; and pain or tenderness, increased on pressure, in some part of the abdomen. Of all these symptoms, convulsions were the most rare. The others existed variously combined and modified.

Causes of Cholera.—The undivided opinion of medical men who saw the disease in India, is, that in the East it is not contagious. After the appearance of cholera in Russia and Poland, however, a belief became prevalent that the disease had been modified by climate, and the habits of the people in Europe; that it had more resemblance to a fever, and was highly contagious. There were few medical men who were not influenced by this specious statement; and I confess that my mind was at one time so strongly impressed with the belief in the contagious nature of the disease, that for the first five or six weeks after its appearance in Edinburgh, when I retired to bed at night, I scarcely expected to find myself alive in the morning. But my fears were at last dispelled, and my opinion is, that if it be contagious, it is not so in any very great degree. The following are the grounds on which this opinion is formed.—It was intimated to me, by authority, that as the disease was so contagious, every possible precaution must be taken to prevent its extension, and that *few bodies could be allowed to be opened*, as the contagion was more virulent and searching after than before death. But from the moment my mind was made up to accept the appointment, I resolved that fear should not be allowed either to interfere with my attendance on the sick, or to hinder my investigations after death. Accordingly, in attending the first case of cholera in the hospital, I remained in the ward all night, and became so much exhausted, that I fell fast asleep in the bed next the dying person, and slept for above an hour, at a time when my animal spirits

were low, and my physical strength diminished by the fatigues of the previous day. Subsequently, I have more than once accidentally fallen asleep on a bed on which some unfortunate had died, and in a ward in which there were several dying persons at the time. None of the House Surgeons, the number being between 20 and 30, who were seldom out of the wards, had the disease, although their bodies must have been ready to receive the contagion, if fatigue of body, anxiety of mind, and want of sleep, ever predisposed any person to take a disease. Two male nurses had cholera. One was a sober man, and although he had the warning diarrhœa, he neglected himself, but had the disease slightly. The other was a complete tippler; he had a slight bowel complaint, which he concealed, and by way of curing it, obtained leave to go home to see his family; he got drunk, and was brought to the hospital with cholera, but never became collapsed. Several female nurses were also attacked; but that is no wonder, for, independent of the fatigue they underwent, they were drunkards, and bad characters in other respects; and were actually in the habit of drinking the spirits and wine served out to their patients. Two of these characters, after much fatigue and a hard course of drinking, went to bed one night quite drunk; they were both speedily seized with cholera,—one died. But there is no proof of the influence of contagion in these cases In truth, no case has ever been advanced in proof of the contagious nature of cholera, that cannot be explained on other and more satisfactory principles. Is it because four children, with father and mother, in one family, have had cholera, and because communication can be proved between them and an infected house, by means of a bundle of dirty clothes, or a web of linen, or actual personal contact, that we are rashly to attribute the whole to contagion? The same story may perhaps be told in a different way.—The father is a dissipated good-for-nothing man, who spends almost all his wages on whisky; he deprives his family of the means of procuring suitable nourishment; the poor mother has pawned her last blanket, to purchase a few potatoes for her starving children, who have all had loose bowels for several days or weeks. The explanation is easy to shew the strong predisposing cause—insufficient cloth-

ing, deficiency of food, &c. What answer can be made to this fact, that I have seen several mothers suckle their children when they themselves were dying of cholera, and in one instance I found an infant sucking its dead mother's breast,—and yet not one of them had a symptom of cholera, at least for months afterwards? The wife of the first person attacked with cholera in Edinburgh, was found "*dead drunk*," lying with her face on the breast of her dead husband, whom she had robbed of his stimulants; yet she escaped the disease!—I shall drop this subject after submitting the following statement to my readers. In the Drummond Street Cholera Hospital there were 280 bodies examined. Two, and sometimes three hours, were spent in examining each body. From the economical arrangements of the Board of Health, and the difficulty of procuring a proper apartment, the dead-room, where these examinations were conducted, was a miserable place about eight feet square; generally six or eight persons were present, sometimes more; and in an inner apartment, about ten feet square, there sometimes lay six dead bodies. Not one of those who frequented this den of death, and who had their hands imbrued in the secretions of the dead for six hours out of the twenty-four, were affected with cholera, although their hands were irritated and punctured daily!

It cannot be denied that some mysterious influence was operating at the period cholera prevailed, by whatever name it may be called,—that it selected its own victims—exercised its poisonous qualities in one district, town, or hamlet, more than in another—changed the scene of its ravages suddenly and capriciously, and made its progress from place to place, by strange detours, avoiding many populous situations, in the direct tract of human intercourse.

This influence shewed its visible effects on the stomach and bowels, by embarrassing the functions of the various organs connected with the digestive functions. Mr Dick, the Professor of Veterinary Medicine in Edinburgh, published a paper in the "Veterinarian" for April 1833, wherein it is shewn that cholera was by no means uncommon among domestic animals, particularly horses and cows, during the epidemic sea-

son in Edinburgh. They had diarrhœa and rigid cramps; the blood was viscid and dark; the discharge from the bowels resembled that from the human subject. Several animals died suddenly, and the appearance on dissection resembled those in the human subject, particularly in the stomach and bowels.

Were any persons more prone to contract cholera than others? This is an important question, and it is rare that a point in medical investigation can be so satisfactorily answered. All who had any important visceral disease, or tendency to bowel-complaint from slight causes, and drunkards, were the persons generally attacked. It is no doubt certain, that in each locality where cholera prevailed, some instances may be quoted to the contrary; but these are very few indeed, and are to be regarded as exceptions to the general rule. Nothing could be more unsatisfactory than the accounts we received of the previous health and habits of patients; very frequently we found them to be quite the opposite of what had been stated; but when we opened the bodies, in the careful and minute manner in which the dissections were conducted, we had the best evidence that few subjects were even tolerably sound.

Persons advanced in age, had, in the epidemic that I saw, a bad chance of recovery. Females seemed to be more liable to the disease than males. Almost every woman we opened, under a certain age, had the catamenia; and we found a great number of diseases, of various kinds, of the uterus, ovaries, tubes, and broad ligaments.

Morbid appearances observed in Cholera.—These might be divided into those appearances connected, and those unconnected, with cholera. It appears to be not only proper, but necessary, to separate these into two classes of morbid appearances, when we are collecting evidence to enable us to draw legitimate conclusions regarding the nature and seat of any disease. This may not be easy, or even possible, in every case of cholera; but in general it is a task readily achieved by any one who has been so much employed as I have been, for nearly thirty years, in making pathological researches. A distinction must also be made between the appearances found

in persons who died in the stage of collapse, and those in the consecutive fever, or third stage.

Among the appearances we met with unconnected with cholera, may be mentioned, tumours, and old abscesses in the brain; ancient thickenings, and osseous productions of the membranes; diseases of the heart, lungs, and blood-vessels; morbid lesions of the liver, gall-bladder, and ducts, of the spleen, kidneys, and uterus, of the stomach and bowels. Diseases of these organs we saw in almost every case, either singly or in various combinations. Although this distinction is necessary when employed in searching for the true nature and seat of cholera, yet all the morbid appearances must be again combined in considering the dreadful mortality of the disease. In doing so now, it appears to me that the influence, whatever it may be, whether electrical, dietetical, atmospherical, or terrestrial, selects diseased subjects.

No other conclusion can be drawn from the facts I have seen. On the other hand, some of these appearances, such as ulcerations of the bowels, diseases of the kidneys, extensive diseases of the lungs and heart, and more particularly extensive diseases in the inner surface of the arteries, must be placed in pathological connexion with other circumstances, to enable us to account for the varieties of the disease, the occurrence of certain symptoms, their obstinacy, the effects of remedial agents, as well as the causes of death.

The morbid appearances peculiar to Cholera, observed in those persons who died in the collapsed stage.—The blood attracted our attention in the first dissection, and it had the same appearances to the last. It was dark coloured, and had lost much of its fluidity; this was expected, from the accounts that had previously reached us from other countries. But we were astonished to find, that it was contained in the arteries and veins, in the most minute capillary, as well as in the larger vessels; that it had the same dark colour in both sets of vessels, some of them containing a small quantity, others being enormously distended.* The capillaries and large veins

* In one case the following were the dimensions of some of the abdominal vessels: Diameter of abdominal aorta, 1 inch; above the bifurcation, $\frac{6}{10}$ths of an inch.
——— Cava, 1 inch and $\frac{8}{10}$ths.
——— Emulgent Vein, $\frac{8}{10}$ths of an inch.

on the surface of the body, contained as much blood after death as during life. On opening a vein in the dead body, the blood flowed almost as readily as it had done during life in the same person. The surface therefore retained the same dark appearance as it presented during life, and the muscles were of a dark red colour. In the act of death, or immediately afterwards, in all other diseases, the blood leaves the capillaries, recedes from the surface, and collects in the heart and large veins near it; the arterial system is generally quite empty, but occasionally a little blood is found in the aorta. Here are at once observed three remarkable facts: 1*st*, An alteration in the appearance and consistence of the vital fluid; 2*d*, A change in its distribution; 3*d*, Blood can be drawn from a vein almost as readily after death as during life; and the important circumstance may be noticed, that there was an appearance everywhere of abundance of blood. Every incision that was made, even in parts not depending, occasioned a flow of blood, so as often to be troublesome, by impeding our examinations. Some thought the blood oily.

In the Head.—Great vascularity was observed on the surface of the brain and in the membranes;—not only were the capillaries injected, but the trunks of both arteries and veins were filled with blood,—the vertebrals, carotids, and circle of Willis, as well as the vena Galeni, and the longitudinal and lateral sinuses. In the longitudinal and lateral sinuses, however, the blood was not always in a semi-fluid state, but often coagulated, and sometimes there was a fibrinous clot extending through the course of the sinuses of the brain into the jugular veins. This appearance of fibrin was observed also in those who died in the consecutive fever. On the lateral surfaces of the hemispheres of the brain, we frequently observed an extensive ecchymotic patch; sometimes there were several patches of this kind. This appearance was produced by an effusion of bloody serum between the arachnoid and pia mater. The injection on the surface of the brain was more florid than that in any other part of the body. The ecchymotic spot occupied in some cases only about an inch and a half in length; in others it was very extensive, involving the whole of the hemispheres, and occasionally extending down between them.

The vessels of the pia mater, the velum interpositum, the plexus choroides, and the lining membrane of the ventricles, were injected. The surface of the fourth ventricle, in general so white, was seen vascular, occasionally slightly stained with blood. The ventricles, whenever they were examined with a view of ascertaining the point, were found to contain a considerable, sometimes a large quantity of serum. Sections of the brain displayed the cortical substance much darker than usual, and the brain generally exceedingly vascular. As soon as a section was made there immediately appeared numerous large drops of blood, in size and number much greater than is observed in other diseases, even in active inflammation of the brain. In above one hundred and fifty cases, the spinal marrow and its membranes were minutely examined. In all, there was a very considerable quantity of serum, the membranes highly injected, the rachidian veins gorged with dark-coloured blood, and the substance of the spinal marrow, in a few cases, appeared a little softer in texture than natural. In a large number of subjects, there were ossific depositions, in the form of scales, seen on the arachnoid surface; occasionally they were very numerous and large.

The general practice was, to place the subject on the face as soon as death occurred, with a view of preventing engorgement of the spinal marrow and brain, from depending position.

In the Thorax.—The lungs were found gorged with dark viscid, oily-looking blood; they were heavier than natural, in some instances weighing 3lb. 9 oz.* Pleura minutely injected; in those who died rapidly, both the pleura and pericardium had a dry appearance; in other cases the pleura had an unctuous feel, also the serous surface of the pericardium and heart. Ecchymotic spots, of the form and size of petechiæ, were frequently seen on the pleura costalis and pulmonalis, extending in many instances a line or two into the sub-

* This subject was a male. The smallest weight in a male aged 33, tall and well proportioned, was 1 lb. 1 oz.; and in a female aged 38, it was the same.

stance of the lungs. Occasionally, in those who died in this stage, there were seen one, or perhaps two, small portions of the lung indurated, and stained of a dark-red colour, presenting all the characteristics of "*pulmonary apoplexy*;" this appearance, however, was more frequent in those who died in the consecutive fever. The bronchial membrane was injected, the tubes occasionally gorged with mucus, of various degrees of tenacity and tinges of colour.

The surface of the heart, and large vessels, very vascular, presenting many ecchymotic spots, more particularly on the acute margin of the right ventricle, and the aorta. In many instances, these were found to extend deep into the subjacent tissue. On making sections, to display the cavities of the heart, the left ventricle was almost invariably found in the state of *hypertrophy*, with diminution of the cavity, and generally empty. In the right auricle and ventricle, there was found a fibrinous clot, sometimes white, like coagulable lymph, at others stained with blood, consisting partly of lymph and coagulated blood of a dark colour. When a mass of lymph was found in the right auricle and ventricle, it invariably extended into the pulmonary artery, and in many cases could be traced into the smallest ramifications; and sometimes the pulmonary veins had a similar plug. On several occasions, the auriculo-ventricular opening was closed by the plug, prolongations from which were found interlacing between the columnæ carneæ and cordæ tendineæ.

In the inner surface of the aorta, and in a few cases in the pulmonary artery also, there was seen a distinct false membrane, completely covering the inner membrane, and extending into the vessels that are given off from it; this membrane did not always seem to be of recent date, but in many of the dissections it was observed in an incipient state. It was most completely formed near the heart; and on some occasions it was seen below the arch of the aorta, in the act of forming, presenting an appearance like tenacious mucilage, continuous with the portion already organized. Occasionally it was tinged of a dark, sometimes of a bright red colour, but generally it was white, and easily separated from the proper lining membrane, even with the handle of the scalpel. In the few

cases in which it was found in the pulmonary artery, it was thinner, and not so completely organized. In the aorta, we frequently traced it to the bifurcation of the iliacs; sometimes half-way from the heart, perfectly organized, the rest being in a gelatinous state. When separated, the proper shining smooth character of the inner membrane was seen beyond all doubt, except at parts where there were artheromatous depositions, which were sometimes confined to the false membrane, at others extended into the proper coats of the artery.

We carefully removed the contents of the thorax, not only with a view of submitting them to minute examination, but also to investigate into the condition of certain nerves and ganglions. I shall now shew the state in which we found the pneumo-gastrics, phrenics, splanchnics, and semi-lunar ganglia. The dissection of the neck shewed minute injection of the large vessels, both sets containing dark-coloured blood, more particularly the veins, which were often not only full but distended.

The pneumo-gastric nerve was frequently seen stained of a dark-red colour, through its whole course in the neck and thorax. Sometimes there was merely vascularity on its surface, till it crossed over the subclavian artery, where, in many cases, it was enlarged, so as to resemble a ganglion. This enlargement was always tinged of a bright purple colour, and existed on the right side only But the nerve was frequently similarly tinged at this point through its whole substance, when there was no enlargement. On tracing these nerves onward in their course, they frequently presented a red appearance.

The phrenics, as they passed over the pericardium, were observed to partake of the general injection; and when the pericardium presented a half-dried appearance, these nerves were similarly affected.

In a great many cases, we carefully traced the splanchnics on both sides of the spine, to the semilunar ganglia. In this part of the thorax, there was minute injection of the vessels, and ecchymotic specks, like petechiæ. These nerves were implicated in the injection on their surface, but in two subjects only was there any discolouration or other mark of disease in the substance. In one or two cases, it was thought

the ganglia were somewhat changed from the natural colour, but we discovered our error, having had, at that period, several opportunities of examining these ganglia in persons who died of other diseases, when a similar appearance was seen.

Abdominal Organs.—In the stomach, in two or three cases, we found a considerable quantity of undigested food that had been eaten a few hours before the attack, and on one occasion, a number of small stones, pieces of slate and tiles. In some cases, there was considerable injection of the peritoneal surface of the viscera, but this was by no means frequent. The stomach was in general contracted, sometimes remarkably so, and several times divided, by contraction in the centre, into two cavities. The intestines contained more or less of a matter similar to that vomited during life. Unless the patient lingered long in the second stage, no appearance of bile was seen in the bowels. The mucous membrane of the stomach was occasionally, but not always, vascular; sometimes quite white, but almost always much softer than natural, and in many cases thickened and quite pulpy, so as to be removed with the slightest touch of the handle of the scalpel. The mucous membrane of the intestines was in general more vascular than that of the stomach, sometimes more minutely injected than if size and vermilion had been thrown into the vessels. Occasionally there was ecchymosis, and frequently softening of the mucous membrane, sometimes ulceration, particularly in the ileum and colon. The mucous follicles were generally enlarged, and Peyer's patches, so rarely seen in adult age, were seldom wanting; they were large, elevated, soft and spongy, and sometimes slightly ulcerated. In many cases, we found the colon, and sometimes the ileum, thickened, the mucous membrane soft, dark-coloured, and disorganized, as in some of the worst forms of dysentery.

The liver was frequently diseased, and the disease not of recent date. Occasionally this organ was very vascular, and we rarely missed seeing sufficient quantity of bile in the pori. In two instances only were there such appearances of engorgement as are described by the India writers.

The gall-bladder was in every instance filled, sometimes distended, with dark-coloured and somewhat viscid bile, the organ

itself being very vascular, and in many cases containing gall-stones. In no instance, save one, did we discover any impediment in the passage of bile through the ducts into the duodenum. In that solitary instance, a spherical-shaped calculus obstructed the passage.

The kidneys were generally diseased. The disorganization described by Dr Bright, was very frequently met with. The vessels of these organs were almost uniformly highly injected,—a puriform fluid was always found in the papillæ.

The bladder was always contracted, so as to be as small and dense as a virgin-uterus.

The following appearances were found in the bodies of those who died in the Third Stage.—Marks of inflammatory action in the membranes, and more rarely in the substance of the brain. In almost every case the vessels ramifying in the membranes were injected; there were traces of ecchymotic patches and turbid effusion between the arachnoid and pia mater, as well as in the ventricles. In many cases we found the fibrinous plug, formerly mentioned, in the sinuses adhering to the sides of the vessels. In several cases, inflammatory disorganization was seen in the substance of the brain; sometimes the white ramollissement or liquefaction of the septum lucidum and walls of the ventricles, and in two or three cases the red ramollissement and destruction of considerable portions of the brain. It must be confessed, however, that in a few cases the brain was to all appearance sound. The traces of bronchitis, pneumonia, pleuritis, and pericarditis, were frequently observed too decidedly marked to be mistaken; such are to be expected from the injected and ecchymosed condition of these parts in the previous stage. We frequently found the fibrinous plug in the right side of the heart, extending into the pulmonary artery; it was generally more dense than in the second stage. I never saw so many examples of inflammation of the tissue of the lungs, as in the dissection of persons who died in the third stage of cholera. In the abdomen, traces of inflammation of the peritoneum were also discovered. The mucous membrane of the stomach, bowels, lungs, and kidneys, presented similar appearances to those noticed in the second stage. Feculent or bilious matter was always met with

in the intestinal tube, and frequently urine in the bladder; sometimes the latter organ was much distended. The coats of the gall-bladder were still highly injected; the organ itself, instead of bile, now contained a serous fluid, having a yellowish or greenish tinge. If the person lived some days in the third stage, the state of the blood, and its distribution, more and more resembled the appearances seen after death from other diseases.

Pathological Considerations respecting Asiatic Cholera.—After having reflected on the morbid appearances seen in the first twenty cases that occurred, and having compared these with the phenomena of the disease in its different stages, and contrasted them with the symptoms, terminations, and morbid appearances observed in other complaints, I began to suspect the correctness of the opinion promulgated by the medical men in India, at different times since 1817. Every hour's experience strengthened a belief, that their views were unfounded and erroneous. The general belief is, that cholera (however produced and propagated,) affords the best example of a disease consisting of a loss of balance in the circulation, and consequent accumulation of blood in internal organs;—that death is occasioned by stagnation of the blood, and the impossibility of creating re-action. This view of the nature of the disease seemed to receive support from the following circumstances:

1*st*, The difficulty in procuring a flow of blood on opening a vein or artery; the slow motion of the blood, its dark appearance, and its imperfect coagulation. These are circumstances frequently observed in intermittent and other fevers.

2*d*, The success of V. S. when employed early in the disease in India, made practitioners conclude, that the practice of V. S. operated by unloading the internal organs of the accumulation of blood that oppressed their action, and restored the balance of the circulation.

3*d*, The phenomena in the third stage appeared to support the analogy between cholera and those forms of fever preceded by a cold stage.

The following facts appear to me to disprove these views in a satisfactory manner.

1*st*, The absence of rigors. I have not seen any practi-

tioner who stated that he had ever observed this phenomenon in cholera. The absence of rigors struck my mind early in the epidemic, as a remarkable circumstance, distinguishing cholera from all other diseases, but more particularly those characterized by a decided loss of balance of the circulation, and accumulation of blood in some internal organ or organs.

2*d*, Every individual remedy, which in the other forms of disease connected with loss of balance of the circulation occasions remarkable mitigation of suffering, produces discomfort, and even pain, in cholera.

Thus, in cholera, hot applications and drinks are dreaded, which in the cold stage of other diseases are urgently and importunately demanded. In the cold stage of intermittent, for example, there is a demand for warm drinks and hot applications; in cholera, for cold.

3*d*, The full state of the blood-vessels on the surface of the body in cholera, after death as well as during life, contrasted with their empty condition, particularly after death, in all other diseases.

What persons were most frequently attacked?—The answer to this query has been already given, and is now a matter of history. The weakly, particularly those who are liable to complaints in the stomach and bowels, and who are subject to diarrhœa. The destitute, who can neither command proper food nor raiment. *And above all*, the dissipated, particularly those who are addicted to the habitual use of ardent spirits.

The condition of the blood is very remarkable, and has attracted the attention of the most superficial inquirer. Even without the assistance of chemical analysis, it is quite evident that the blood is thick, tenacious, dark in colour, and has an oily appearance, flows with difficulty from vein or artery, and coagulates imperfectly. But by the analysis of different chemists, it is established that the serous part of the blood, the salts and the albumen which the serum holds in solution, are found deficient to a great extent. These experiments differ in minute results, but the broad fact is as above stated.

This thick blood, after finding its way into the arterial capillaries, cannot easily escape, owing to its viscidity. This

is one cause of the slow motion of the blood. In many parts these small vessels give way, and ecchymosis is the consequence. This appearance has been seen in every organ of the body.

It is not unreasonable to suppose, that the blood becomes viscid by the abstraction of the serum, and that this is effected by the copious watery discharge from the stomach and bowels. If this view be correct, it will enable us to apply the doctrines, by which Boerhaave attempted ineffectually to explain the pathology of inflammation, to Cholera Asiatica.

In reviewing the long list of morbid appearances already described, it becomes a matter of the first importance to determine accurately, if any of these lesions are peculiar to cholera. If so, can they, by a fair process of reasoning, be connected with the symptoms in the relation of cause and effect?

It has been already admitted, that a large proportion of the morbid appearances must have existed before the attack of cholera. They are brought forward as decided proofs of the previous diseased condition of the system of those attacked, acting as powerful predisposing causes of cholera, and also to assist in accounting for the fatality of the disease.

I must further state my opinion, that a number of the morbid appearances considered peculiar to cholera, are undoubtedly occasioned by the diseased condition of the blood, and cannot be considered as causes of cholera. But they are strictly connected as causes of death in the collapsed or blue stage, and of the phenomena of the third stage. They prove satisfactorily why so few made rapid recoveries, and why so many had necessarily to undergo the miseries and dangers of the consecutive fever.

Treatment of Asiatic Cholera.—No better evidence can be offered of the ignorance of the profession generally as to the nature and seat of any disease, than the number and variety of remedies that have been confidently recommended for its cure. This was never better exemplified than in the disease now under consideration.

The following long catalogue was made out at the time cholera prevailed, but it is not even pretended that all the remedies are enumerated.

Venæsection; Cupping; Dry Cupping; Arteriotomy.—Emetics of Mustard, Ipecacuanha, Antimony, and Sulphate of Copper.—Calomel; Colocynth, singly and combined; Castor Oil; Croton Oil; Jalap; Opium; Calomel and Opium; Fluid Mercury; Mercurial Frictions; Opium combined with Antimony; Opiate Confection; Colchicum; Cajeput Oil; Peppermint Oil; Capsicum; Charcoal; Camphor variously combined; Æther; Mint Tea; Spt. Ætheris Nitrici; Magnesia; Milk; Milk and Magnesia combined; Lime Water; Alkalies; Spt. Ammon. Aromat.; Dover's Powder; Ox. Bismuth.—Various Balsams.—Acetate of Lead; Nitrous Acid; Soda Water; Cold Water *ad libitum*; Water prohibited; Effervescing Draughts; Strychnia; Various Rubefacients in the shape of Frictions, Sinapisms, Embrocations.—Various Contra-Irritants,—as Blisters, Antimony Ointment, Moxas, Actual Cautery, Bastinadoing the feet! Cutting the throat! Suffocating under a feather-bed! Injections of Oxygen Gas into the bowels! The application of heat in the shape of Warm Bath, Vapour Bath, Fomentations; Dry Heat; the application of Cold.—Galvanism.—Injections of Beef Tea, Starch and Opium, Turpentine, Chamomile Tea, Hot Water, Cold Water, Strong Solution of Potassa Fusa, Tobacco, Port Wine, Alcohol, Sulphate of Copper, Acetate of Lead, &c. Stephen's Drug; Saline Injection into the Veins.

The above list would be humiliating to the whole profession, were it not remembered how much anxiety and excitement prevailed among medical men at the time, so much so, that several lost their reason, and many their lives on the occasion. Many of these remedies are totally opposite in their nature and principles of action; many of them were proposed upon erroneous principles, and many more upon no principles at all; but by far the greater number were recommended on the prevailing notion, that cholera was a disease affording the purest example of a loss of balance of the circulation, and consequent accumulation of blood in internal organs. The diarrhœa and vomiting were regarded as efforts of nature to unload the engorged vessels, and therefore formed an important part of the sanatory process.

I have already attempted to shew that this was a pathological error, and, if the views which have been given in these pages be correct, the practice must have been very prejudicial. I allude more particularly to the following remedies, —bleeding, purgatives, and emetics.

Another theory, that cholera depended on deficiency of the biliary secretion, requiring large and frequently repeated doses of mercury, has, I believe, been also prejudicial.

With respect to the advantages that may reasonably be expected from abstracting blood, I believe that venæsection may be employed in the first or premonitory stage, when it acts by checking the diarrhœa, and allaying the irritability of stomach. After collapse took place, bleeding in any form rarely proved serviceable, and was injurious in most instances in which it was employed within my observation. But it is a remedy which ought to be kept in view, to moderate febrile movement, and to extinguish local inflammations in the third stage.

Having made these brief general remarks, I shall now describe the treatment which experience at the bed-side, and morbid anatomical investigations, have led me to adopt; postponing for the present the consideration of the practice of saline injection, which it is my intention to notice in a separate article.

A patient should be treated according to the actual state in which he is found; this circumstance, therefore, leads me to consider the treatment in the different stages of the disease.

Treatment in the First Stage of Cholera.—This, it will be remembered, has been likewise termed the premonitory stage. If there be evidence of the stomach being loaded, vomiting may be induced by a copious draught of tepid water, chamomile tea, or mustard and water. The stools should be examined: if they contain hard masses of feculent matter, a mild injection may be administered, or a small dose of castor oil exhibited. But should the stools be watery, copious, more particularly should they have assumed the characteristic appearance, the diarrhœa should be immediately checked by a dose of laudanum, an opium pill combined with a small quantity of calomel, or a few grains of opium introduced into

the rectum. A warm bath should be used, and the patient afterwards put to bed. If the patient have been previously in good health, temperate in his habits, and the pulse strong, a vein may be opened, and a sufficient quantity of blood abstracted. It is in such circumstances that venæsection may be expected to be useful. I have known many individuals destroyed when in this critical state, apparently by taking a laxative, even a small quantity of calcined magnesia, or an emetic. Saline medicines should be proscribed during the continuation of a cholera epidemic, as I have seen several people sink rapidly into a fatal collapse under their operation, who had had no previous bowel complaint, but felt slight oppression, which made them wish to unload their bowels. The patient should be carefully watched, so that the heat of the body may be kept up to the natural standard by proper applications,—the discharge opportunely restrained by the employment of opiates,—and the pulse supported by the exhibition of stimuli. Digestion being in all such cases impeded, the lightest food only, such as arrow-root, should be allowed, and in small quantity at a time. It is in this stage that copious draughts of any liquid prove injurious. When patients escape from the condition just described, a slight febrile movement, symptoms denoting cerebral irritation, or considerable bodily debility, frequently follow, either singly or combined, and must be treated accordingly. Confinement to the house, great quiet, and attention to the functions of the stomach and bowels, must be enjoined for some time, as relapses are frequent, and I have known fatal collapse to take place suddenly in several cases after one or two such warnings had been neglected.

Treatment in the Second Stage of Cholera.—Although I have known V. S. employed advantageously, and strong purgatives used, without producing death in this stage of the disease, I cannot state the fact too strongly, that they are dangerous remedies. In taking a retrospective view of the cases as recorded in the books of the Drummond Street Hospital, I cannot but condemn the practice which I myself had recourse to, but more particularly that which relates to the exhibition of purgatives; and were I treating the disease again, I would avoid exhibiting any remedy that would in the least degree

tend to produce one additional alvine evacuation, or irritate the stomach.

Rubefacients form another class, along with irritants, which cannot be too strongly condemned in the second stage. They were recommended upon the old view of producing a flow of blood to the surface, in order to relieve internal organs. Long before I knew the error of this theory, I had arrived at the conclusion, that they never do any good, while they irritate and annoy the sufferers. Much have I been pained to see moxas and the actual cautery applied. I never observed beneficial results in any case from these remedies, although the hot iron has been drawn along the spine on each side, from the occiput to the sacrum. Hand-rubbing would seem to be serviceable, by assisting the motion of the blood; and it appeared to allay the severity of the pain occasioned by cramps. Although hot applications seemed to create uneasiness and impatience, still I am convinced that warmth is necessary, when the temperature of the body is much reduced. Warmth appeared to mitigate the violence of cramps, if it did not prevent their recurrence. It appeared to me that dry heat was best. I therefore had tin cases constructed the length and breadth of the body, to contain the vapour of boiling water. Each tin case was open at both ends, was deposited in the centre of a loose straw bed, and covered with a folded blanket. It formed rather a hard bed, but there were few patients who could not endure it for two or three hours, and there was seldom occasion to keep them longer. After a number of experiments, I succeeded so well that I could heat a bed sufficiently in three minutes, and support the heat for any length of time, or reduce it at pleasure, by vapour from a boiler, which communicated by pipes furnished with stop-cocks, with several beds in each receiving-ward.

Cholera patients suffer from intense thirst, and their anguish always appeared greatly increased if they were restricted as to the quantity of liquid. In the Drummond Street Hospital every method was tried, viz. by restricting the quantity of liquid, by allowing a moderate quantity, or affording an unrestricted supply; and we came to the conclusion that the last was the best method.

Stimulants are necessary when the pulse and action of the heart become feeble, but should be discontinued upon the occurrence of re-action.

It has been already stated, that the discharge from the bowels should be checked as early as possible. For this purpose opium, in various shapes, has been used. Perhaps the best method is to give repeated small doses by the mouth, or to introduce an opiate suppository into the rectum. The acetate of lead and sulphate of copper have been used for this purpose, but not with good effect. I was induced to employ strychnia as an astringent, and began with doses of 1-12th of a grain; we gradually increased the quantity to 1 grain, repeated according to circumstances, every hour, or second hour. We thought good effects were produced; and in one or two instances only, did spasmodic twitches or other unpleasant symptoms arise, although this powerful remedy was pushed to considerable extent. It appeared to act by not only restraining the discharge from the bowels, but by shortening the collapse, and rendering the re-action more permanent. I frequently wished that gentlemen who proposed new remedies, would look at the morbid appearances. If the mucous membrane of the stomach were so soft and pulpy, as to be easily separated from the subjacent coat by a touch of the handle of a scalpel, surely irritating medicines are contra-indicated? If there were great irritation, inflammation, ulceration, and an appearance of sphacelation of the large intestines, surely injections of port wine, alcohol, salt dissolved in water, and more particularly potassa fusa, were improper? In truth, from indiscreet zeal much mischief was occasioned; by doing too much, the sufferings of many a patient were greatly increased, and odium was thus brought on the profession. In the Drummond Street Hospital, we fairly tried all the remedies recommended, but observed no advantage from a large majority of them. Thus, Stephen's saline solution, which it was stated had operated like magic elsewhere, was tried and laid aside. This medicine was used for the purpose of restoring the serum of the blood; but no one who has seen the mucous membrane of the stomach and bowels in cholera subjects, can have any faith in such a remedy. It was not

found serviceable in any one case, and was injurious in many, by exciting vomiting and purging. The oxid of bismuth and nitrous acid were prescribed according to the directions received; but we never could discover any advantage from their use, although they were less injurious than most of the other remedies.

Treatment of the Third Stage of Cholera.—It has been already stated, that as soon as the stage of collapse begins to give way to re-action, stimulants should be diminished, and ultimately omitted entirely. Looking at the vascular engorgement of the capillary vessels in every organ in the body, together with the ecchymotic spots, so frequently discovered on dissection, there is nothing very encouraging to support us in any plan of treatment. But we must recollect that recoveries do take place, and that there are no limits to the efforts of nature when she is in difficulties; and that the chances of recovery are greatly increased, if we are acquainted with the morbid condition of vital organs, and know the kind of assistance that ought to be afforded. My impression is, that we do not trust to nature sufficiently in the early part of this stage; that we have always been too anxious to increase the force of the circulation, and in too great haste to produce feculent evacuations, and a copious flow of urine. By erring in this respect, irritability of stomach is created, and when this is once established it is very intractable. I know of no remedy which can restrain the violent bilious vomiting except extensive leeching, and irritating the surface of the abdomen. I have seen much benefit produced by V. S. in this stage, as also from repeated applications of leeches to relieve the brain, lungs, heart, and organs in the abdomen, when oppressed with too much blood, or inflamed. Often have I had to deplore my own timidity upon finding lymphy effusion, the undoubted product of inflammation, in all the cavities after death. But notwithstanding these remarks, it cannot be denied, that great discrimination and experience are required in investigating the physiological and pathological condition of each patient. If there be cerebral disturbance, it must be treated on ordinary principles. The symptoms are generally vertigo, lethargy, or coma. We must keep in recollection the vascular state in which the brain and

its membranes are left at the termination of the stage of collapse; the ecchymotic patches produced by effusion of a bloody serum, between the membranes, and the plug or coagulum, found in the great venous channels. We may do a great deal by shaving the head, and keeping it cool, by frequent cupping, or application of leeches. Subsequently, the application of antimony ointment to the head, to produce long-continued irritation, was found very beneficial. The use of opium in this stage is to be suspended. I have seen it employed by itself, and conjoined with calomel, to restrain the bilious vomiting, but without effect.

In this stage we frequently pushed mercurial preparations to considerable extent, both internally and by means of inunction, so as to affect the system speedily. I cannot say they did harm in every case, but they often did mischief, and I was never sensible of any good effects.

In this stage blisters and other contra-irritants are serviceable; keeping the morbid appearances in view, I scarcely think we were active enough in this respect.

If the bowels are not moved sufficiently, the most gentle and unirritating laxatives, such as rhubarb, should be used. If the urine be scanty, particularly if there be pain in the region of the bladder or glans, draughts composed of camphor mixture, with a few drops of laudanum, and a little sweet spirit of nitre, may be useful. It is adviseable in some cases to introduce the catheter, which often allays irritation. I have seen large collections of urine in this stage, when not suspected.

Many persons died in the course of the consecutive fever, from pneumonia, pleuritis, pericarditis, peritonitis, but still more from bronchitis. This is to be expected from the morbid appearances found in those who died in the previous stage. Many persons died of old organic diseases of every organ, but more particularly of the lungs; as long standing chronic bronchitis; chronic, calcareous, and tubercular degenerations, and emphysema of the lungs; together with diseases of the heart; aneurisms, and other diseases of the arteries.

Treatment of Asiatic Cholera, by injection of Saline Solution into the veins.—That there is a deficiency of serum in the

blood in cholera patients, was soon suspected; and the point having been well established by chemical analysis, the attention of practitioners was directed to discover the cause of the deficiency, and means were employed to restore the loss.

I have no doubt of the correctness of this view, which appears to be proved by the following facts. 1st, When artificial serum has been added by injection, and mixed with the circulating blood, the bad symptoms have vanished, and every appearance of health has been restored. (Vide page 367.)

2d, Blood drawn from the system after the saline injection, generally presented the natural appearance.

3d, Unfavourable symptoms have frequently returned with all the horrors of collapse, after copious discharge of similar fluid from the stomach and bowels; and again and again has the system been restored by venous injection, and the patients ultimately saved.

The bold idea of restoring the loss at once, by injecting a large quantity of saline solution into the venous system, occurred to the original mind of the late Dr Latta of Leith, who by his unwearied and unremitting exertions on this occasion, contracted bad health, and died soon afterwards of consumption.* He was ably and zealously supported in his investigations by Dr Lewins, who encouraged and assisted him, when others threw every obstacle in the way of his experiments, and too often gave erroneous reports of his practice.

When first informed of what Dr Latta had done, my mind became terrified at the contemplation of all the evil consequences which might result from such extraordinary means. The danger of air finding its way into the vascular system, the rupture of blood-vessels, dropsy, and the fatal effects of inflammation of veins, made me, as I have no doubt it did others, regard the cure as worse than the disease. I was anxiously urged to try the practice; but I resisted until Drs Latta and Lewins afforded me an opportunity of examining the body of a woman who had been injected. After a very

* Although Dr Latta's exertions and fate must have been well known to a number of influential men, his grave does not exhibit any monument of public gratitude, nor have his orphan children received any offer of support or protection!

minute and careful examination, I could discern no rupture of blood-vessels,—no effusion of liquid into the cavities or the cellular tissue. In fact, I could see no appearance that was not usually seen in other victims of cholera, when the ordinary treatment had been pursued.

I was too old to be led away by any very extraordinary expectations of the results of this practice; and in order that we might err on the safe side, it was determined, after deliberate consultation with my kind friend and able colleague Mr Meikle, that no one should be operated upon in this manner till every other means had been tried in vain, till the collapse was extreme, and the patient appeared to be in the very jaws of death. While this will be admitted to be the prudent course we were bound to pursue, it will be allowed it was not calculated to give the practice the best chance of success. On the contrary, in looking over the cases, my only surprise now is, that one of the individuals recovered by any means that human ingenuity could suggest.

The substances injected were in the following proportions: Muriate of soda, ℥ss.; bi-carbonate of soda, ℈iv.; water, lb. x.* The temperature was from 106° to 120°. The solution was carefully strained twice through leather. The salts must not be carelessly thrown into very hot water, and subsequently cooled, as we found that water at a high temperature gradually decomposed the salts, and the solution remained turbid. The good effects of the injection were rapid in proportion to the heat of the solution, but patients could not bear a higher temperature than that above mentioned. The precautions necessary in making and using the injection are of vital importance. If solid saline matter be thrown into the circulation, death in all probability must inevitably ensue. If the solution be strained through linen, or a towel, no precaution will prevent minute portions of flaky threads from intermingling; should even one such portion be injected, recovery can scarcely be expected. I need not speak

* We commenced this treatment on the 12th May 1832; the solution was made in the proportions above stated till 21st August, after which the quantity of each of the salts was doubled.

of the danger of injecting air; but I may relate what happened in the Drummond Street Hospital with respect to the tubes. Reid's syringe was the instrument employed, with connecting tubes; every precaution was taken to have the valves of the syringe in good order, and the tubes air-tight. At one period of our operations, twenty-nine cases of death took place consecutively, without a single recovery;—this happened after we had had eight recoveries out of thirty-four cases. The result alarmed us, and we entered into an anxious investigation to discover the cause of such fatality, and in the end we suspected a faulty state of the tubes; they were cut open, and we had the mortification to discover the spiral wire corroded, with scales separating, and others hanging loose. There can be no doubt that many of these minute portions of oxidized metal had passed into the system with the injection. I had a conical-shaped tin vessel for containing the solution, fitted with a cover; the temperature, ascertained by a good thermometer, was supported by placing this vessel in a large tin basin containing hot water. In order to prevent the lodgment of particles of dust, a deal box was made to hold the apparatus. To shew the necessity of carefully straining the solution, it may be stated, that at the second straining, nearly a tea spoonful of saline matter has been collected from the leather strainer. At first we used linen, or a clean towel, as a strainer; and I have reason to suspect that some of the deaths may be attributed to the circumstance mentioned above.

The operation should be performed by two persons; one to open the vein, introduce the tube, and keep it in position; the other to take charge of the fluid to be injected, and the apparatus. It is necessary to have an assistant at hand to do any thing that may be required, so that the attention of the operators may be entirely devoted to the parts they have to act. The position of the operators is a matter of some consequence, as the operation will occupy fully half an hour; the person whose duty it is to open the vein, should be comfortably seated on the side of the bed corresponding to the arm on which he is to operate; the other should be seated across a form, or narrow table, with the vessel placed between his legs. His first duty is to pump the fluid

through the tubes for a few minutes, in order to get rid of any air that may be attached to any part of the syringe, or sides of the tubes,—the extremity of the tube being kept under the surface of the liquid. When the vein has been opened, and the nosle introduced, the operator is to keep it in its place with the finger and thumb of the left hand, and take hold of the extremity of the tube with the right; he is to place his index-finger to stop the mouth of the tube, it being still under the surface, while the other operator gently pushes the piston down,—this is to satisfy him that it is full; he then directs the point towards the nosle, which, if not filled with blood, ought to be filled with the injection before the tube is finally connected with it. All this, to insure success, must be quickly and dexterously done. Upon a signal given by the first operator, the other is to commence pumping, being careful to hold the syringe perpendicularly, and never take his eye from the vessel, or direct his attention to any other matter. The whole of the fluid, consisting of ten pounds, may be with safety introduced in thirty minutes; in which time we may reasonably suppose the blood will have performed the circulation several times, and the injection been mixed in a very gradual manner with the vital fluid. All danger of over-loading the system suddenly, and rupturing vessels, is in this manner avoided.

It was wonderful to witness the effects speedily produced by the injection. These I shall now state under the following heads:—

1*st*, On the pulse.
2*d*, On the cramps.
3*d*, On the temperature of the body.
4*th*, On the respiration and voice.
5*th*, On the expression of countenance.
6*th*, On the restlessness, and other uneasy feelings.
7*th*, On the thirst.
8*th*, On the secretion of urine.
9*th*, On the period of death.

1*st*, *On the Pulse.*—It is remarkable how speedily the injection affects the pulse, making it perceptible after it had ceased to be felt at the wrist. By the time four ounces were introduced, the pulse could generally be distinctly count-

ed; and when about three pounds were introduced, it became a tolerably good one, although it might be still feeble, and perhaps rapid. At last, when the pulse became of natural strength, the injection was suspended for a little. The quantity injected depended principally upon the state of the pulse, and we were always glad when the object was effected with the smallest quantity of fluid. At the same time, as we sometimes found the pulse flag again, requiring an immediate repetition of the injection, we became careful not to discontinue the operation too soon.

2*d*, *On the Cramps.*—The effect on this symptom was quite remarkable; they generally ceased as soon as the pulse became good, and seldom troubled the patient again. Many cases that appeared to us hopeless, from age, and the ravages of previous disease, were injected solely with a view to mitigate the sufferings of the patients, produced by cramps.

3*d*, *On the Temperature of the Body.*—The effect on the animal heat is also almost instantaneous; the body which could not previously be heated, now becomes warm, and instead of a cold, damp exudation on the surface, there is a gentle and genial moisture.

4*th*, *On the Respiration, &c.*—The respiration, however weak previously, soon became stronger. It sometimes happened, when about 4 lbs. of the injection were introduced, that the respiration became rather laborious, which generally gave way after more fluid was thrown into the system. The voice, which had been whispering, now became quite natural.

5*th*, *On the Countenance.*—In proportion as the pulse and the temperature were restored, so did the countenance improve. The eye, from being sunk, became prominent; the shrinking of the features, and the dark colour of the face and of the body, generally disappeared. The expression, in fact, became animated, and the mind lively.

6*th*, *The restlessness and uneasy feelings* vanished. The despondency, vertigo, tinnitus aurium, præcordial oppression, gave way to pleasurable feelings; and I have not unfrequently seen patients sit up in bed immediately after the operation, in perfect possession of themselves, and speak with joy on the sudden transition from agony and death to happiness and life.

7*th*, *Thirst*, however urgent it might have been previous to the operation, soon ceased after its commencement.

8*th*, *The secretion of urine*, in general, soon returned after the injection; but in this we were more frequently disappointed than in any of the other favourable symptoms.

9*th*, *The period of death* was undoubtedly postponed, sometimes for hours, more frequently for days, and sometimes even for weeks, and in some cases a perfect recovery took place.

In noticing, in a previous page, the bad effects which might naturally be expected from this operation, inflammation of the veins was spoken of; but it is remarkable how few instances of this took place, and those which did occur were generally slight, and never appeared to be the cause of death.

The usual and very gratifying effects of this remedy have been already detailed at sufficient length, to shew the complete alteration produced on the character of the disease. But I have now to mention that rigors, severe rigors, almost invariably followed the saline injection. They generally commenced a few minutes after the completion of the operation, sometimes during its performance. If there were nothing more to offer, the occurrence of this phenomenon affords proof, the most decisive, of a pathological change in the system, as no one has ever seen a patient labouring under cholera shiver, or present any thing like a decided rigor.

Early in our operations, several patients, who had been twice or thrice injected, asked me what had become of all the liquid they had received into their veins. This was a natural question, and had intensely occupied my thoughts: but however mysterious the subject appeared to us at the time, it was at last unravelled by watching the operations of nature; for in the course of twenty or thirty minutes after the injection, one or two very copious discharges of a watery fluid took place from the stomach, without nausea, and sometimes there was a large watery stool. Soon after this, unfavourable symptoms again frequently took place; all the appearances of cholera returned, the patients occasionally sank into a collapsed condition, and unless the operation was repeated, death followed. One woman, who recovered, was injected six times: between the first and second operation, three hours interven-

ed; between the second and third, six hours; between the third and fourth, four hours; between the fourth and fifth, four days; and between the fifth and sixth operation, twelve days. In all, fifty pounds and a half were thrown into the system.

In eleven successful cases, one operation sufficed; in these, the quantity varied from three to ten pounds of fluid.

In six successful cases, the operation was twice performed on each patient; the quantity injected varied from ten to fifteen pounds.

In another successful case, the operation was performed three times; the whole quantity introduced was seventeen pounds.

In two other successful cases, the operation was four times repeated in each; in one of these, twenty-four and a half pounds were introduced; in the other, thirty-one and a half. The intervals between the operations varied in these two cases from four to twenty hours.

From memory, I may state that about one half of those who recovered after this operation were bled, or had leeches applied. One, for instance, was bled three times, and had sixty leeches applied; and on looking back at the cases, I believe that several were lost from want of depletion, as febrile symptoms almost always followed the injection, and many of those who died were destroyed by inflammatory action in different organs.

Short account of other substances introduced into the system along with the Saline Solution.—Finding that patients sometimes returned rapidly into a state of collapse, after this operation had been performed successfully, it appeared advisable to make the fluid resemble as much as possible the serum of the blood, by adding albumen, obtained from eggs. In the first case, we added three ounces to the ordinary saline solution; and again, in three hours, four ounces. It was employed in several cases. It did not appear to do any harm, but was laid aside, as no decided beneficial effects followed that were not produced by the ordinary injection. Several patients, thus treated, besides the one whose case is alluded to above, recovered.

Quinine, and the solution of morphia, were also mixed with the injection,—in the proportion of ten grains of the former, and ten drops of the latter,—with apparent benefit; but our experiments were not repeated sufficiently often; our operations were hurried, and our bodies and minds too much exhausted, to enable us to proceed deliberately in such an interesting and responsible field of experiment and enterprise.

Alcohol was used in the injection in one case of extreme collapse, and with the happiest effects for the time. The patient spoke and laughed, and had every appearance of being slightly intoxicated; but in a few hours he again collapsed, and died.

In the Drummond Street Hospital, there were one hundred and fifty-six patients injected, twenty-five of whom recovered.

An important question has often been put to me in reference to these cases,—"Did you diminish the proportion of deaths by this practice?" It may be necessary to remind my readers of the undeniable fact, that of the really collapsed or blue cases, in which the pulse was either so weak as scarcely to be felt, or was imperceptible at the wrist, one case only out of twelve recovered; I think this calculation too high, and that the number of recoveries is not more than one in twenty. The number of recoveries by injection has been already stated,—it gives the proportion of recoveries to deaths as 1 in $6\frac{6}{25}$.

Dr Latta of Leith saved three patients out of nine in his first set of cases; and in the second set, he saved five out of seven. If these were added to the cases in the Drummond Street Hospital, it would give more favourable results; but I am not entitled to make any such calculation, nor is it our wish to stand in a more favourable position in reference to this extraordinary practice. Not one of the patients operated on had a chance of recovery by any other means; we saw no such miracle out of 461 cases in the Drummond Street Hospital. Should I ever have charge of cholera patients again, I shall, profiting by the experience I now possess, use the saline solution at an earlier period of the stage of collapse, nay, at its commencement, in order to lessen the thickness of the blood before organic mischief is done, and to prevent the

formation of the fibrinous clots so frequently, nay, almost invariably, found in the right side of the heart, extending into the branches of the pulmonary artery, also in the great venous channels in the head. It appeared to all who watched the symptoms, and witnessed the *post mortem* examinations, that these plugs were formed during the progress of the stage of collapse, and not after death.

It may be noticed in conclusion, that consecutive fever took place in our injected cases, as well as in the first set of Dr Latta's; but in Dr Latta's second set, none of the five persons who recovered had any febrile movement,—which that gentleman attributed to the employment of the vapour bath for an hour before the operation was performed.

It would have been easy to enlarge on every topic contained in this article, but a certain space having been allotted to cholera in the original plan of this edition, condensation became indispensably necessary. But I hope brevity has not been carried so far as to injure the facts and conclusions. I must confess, that although I always saw the *advantage* of publishing a report of the cases of cholera treated in the Drummond Street Hospital, with tables of results, and delineations of morbid appearances, I now see the *necessity* of completing the work as speedily as possible. Indeed, some explanation is required for the delay;—our story is very easily told.—Mr Meikle and I were anxious for some delay to renovate our shattered nerves for such a work of labour, and to allow all the effects of excitement to pass from our minds, that we might write deliberately, and reflect dispassionately, on a retrospective view of all the facts connected with the disease. In the mean while, Mr Meikle's duties called him back to India, and I have never had a command of time to enable me to take the task in hand. It is to be hoped, however, that sufficient information has in the mean time been given, to silence those who sneered at our exertions, and were pleased to predict that nothing could be expected to spring from our investigations. It is amusing to hear the jeers of the idle and un-investigating portion of the Medical community.—"You are as ignorant (say they,) of the nature and seat of cholera, after having opened *three hundred bodies*, as those

who never examined one subject." If this were the exact state of the case, it can be easily shewn that we are not more ignorant of the causes, and the nature, and seat of cholera, than we all are of every other complaint. Let me ask, Who knows any thing whatever of the causes and pathology of measles, scarlet fever, or any other fever, hooping-cough, pulmonary consumption, tetanus, ileus, hydrophobia, rheumatism, gout, and, I might have added, every other disease in the medical nosology? Does this query humiliate the profession, or tend to unrobe it of its dignity? There are many very worthy persons who will think it does; but I would desire to have my name enrolled in the list with those who, above the influence of professional craftiness, sought after, and exposed the naked truth, and who will at last command a moral influence which others can never attain. But our case is not quite so bad, to say the least in our own favour, as some worthies may think; for if I have failed to shew what cholera really is, it is clearly proved that cholera is not what it has hitherto been supposed to be. This consideration leads me to hope, that other and more able investigators may throw more light upon the subject.

INFLAMMATION OF THE INTESTINAL MUSCULAR AND CELLULAR TISSUES.

I scarcely believe that *acute inflammation* ever primarily affects the muscular and cellular tissues. On dissection they are certainly frequently found altered in appearance and structure by inflammation and its consequences, but never, according to my experience, without distinct marks of the diseased action having extended by contiguity from the mucous and serous tunics. This part of pathology, however, is still open to future investigation; and the subject is merely introduced, to shew that it has not been entirely overlooked, and to mention one symptom which is generally supposed to distinguish inflammation of the muscular coat from that of the other parts of the intestine, and to notice chronic inflammation, with thickening, induration, and permanent constriction of the bowels.

It has been repeatedly observed by writers, and has been

shewn in this work, that in pure peritonitis the bowels are generally easily moved by the ordinary remedies; and that, in inflammation of the mucous membrane, there is generally diarrhœa. Now the peculiar circumstance to which I have alluded, when the muscular coat is in a state of inflammation, is obstinate constipation. Provided a practitioner is aware that inflammation is going on in the abdomen, it is really a matter comparatively of little consequence, what tissue is primarily affected; and it will be almost invariably observed in practice, that those who are most apt to draw minute distinctions, are not the most profound thinkers.

Portions of the alimentary canal are often observed on dissection to be thickened and indurated, and contracted in proportion to the thickening. The parts most frequently found in this state are, *first*, the point of junction between the stomach and duodenum; *secondly*, the point of junction between the ileum and cæcum; *thirdly*, the termination of the sigmoid flexure of the colon, or some part of the rectum; and *lastly*, the whole extent of the colon. In all these situations, the peritoneal coat is generally found sound, and the mucous membrane is sometimes observed to be in no other degree affected than being puckered; so that I am led to conclude, that although the muscular coat and cellular tissues are not so liable to be primarily affected with acute inflammation, yet they are frequently the seat of *chronic* inflammatory action. It must be confessed, however, that there may be some deception here, as the inflammation may have extended from the mucous membrane to the subjacent tissues, as it has been shewn that the former is capable of restitution, even after it has been in a state of extensive ulceration. The cellular membrane of the intestines is more frequently found to be the seat of thickening than the muscular tunic; but occasionally we see the muscular fibres very much enlarged and thickened, in the state that has been denominated hypertrophy. This thickened condition of the coats of the alimentary canal, which is produced by an effusion of lymph, has been too often confounded with scirrhus and cancer; and many people are still in the habit of calling every structure in the body scirrhus, which is ascertained to be harder than natural.

In general, it is impossible to determine by the symptoms, whether or not the parts are in this condition, except the contraction is within reach of the finger, at the lower part of the bowel, or is situated about the termination of the sigmoid flexure of the colon. When the thickening has been found at the pylorus, the symptoms were those of indigestion, attended with uneasiness after food had been many hours in the stomach, and when it might be supposed to be in a state of preparation to pass into the duodenum. When situated in the ileo-cæcal valve, or in the course of the colon, constipation, distention of the abdomen, with frequent threatenings of ileus, have been remarked, together with pain in the situation of the caput cæcum.

In one case where the colon was affected, the hardness could be traced during life throughout the whole extent of its tract. When the termination of the sigmoid flexure, and the rectum, are the seat of the disease, besides constipation, and occasional threatenings of ileus, the history of the case and the state of the stools will in general lead us to suspect the existence of this morbid condition of parts. In addition to habitual constipation, we shall find that there has long been inclination to considerable straining when at stool, which has gone on increasing, so as to induce the habit, which has at last become inveterate, of sitting and straining for a very considerable period, before a moderate discharge of feces can be procured, and after all, the person rises dissatisfied with his efforts, and with a full, loaded sensation in the belly. In such circumstances, when the evacuation from the bowels is of the ordinary degree of consistence, the feces have, it is alleged, a very peculiar form, being either of a worm-like shape, or flat and tape-like ; but I have little faith in this. The only cases which are capable of being cured, are those situated in the rectum, which are within reach of a common bougie, or low down in the sigmoid flexure of the colon. With respect to the contractions in the other parts, much may be done to arrest the disease, and alleviate suffering, by attending to the diet, and to the state of the bowels. To prevent the parts running into true scirrhus or cancer, the occasional application of leeches and blisters are to be had recourse to, and every

cause is to be avoided which can have the effect of irritating the parts, particularly drastic purgatives.

Scirrhus of the Stomach and Intestines.—In the last article, simple induration was described, affecting various parts of the alimentary canal, in which the tissues were not confounded, but merely in a state of hypertrophy, and owing, it is conceived, to chronic inflammation, attended by new deposition. In true scirrhus, on the other hand, there is a thickening of parts, with disorganization, so as to confound the different tissues. It is supposed by Meckel, and other pathologists, that scirrhus degeneration commences in the tissue which incloses the vessels, and the mucous glands, from whence it extends itself so as to involve the mucous and the muscular coats, destroying their natural appearance, rendering them thicker and harder, and terminating at last, if the patient live long enough, in carcinomatous ulceration.

Notwithstanding the great attention which has been paid by many eminent men to the formation of schirrus, it is still involved in mystery. It will be found, however, to be a prevalent opinion, that it depends upon chronic inflammation, of a specific nature, which has a tendency to the formation now under consideration; in the same manner that long-continued inflammation in gouty subjects, being of a specific character, has a tendency to deposit calcareous matter. It is interesting, however, to know, that the serous coat of the stomach and bowels is the part last affected in these cases, so that on dissection it is found either quite healthy, or only slightly thickened or opaque-looking, still preserving its natural gloss; if there are traces of inflammation, they will in general be observed to be recent. In two preparations only have I seen tubercles projecting from the serous coat, while the other structures were affected with scirrhus; one of these, a cancer of the stomach, is now in my Museum. There is always a difficulty in examining an indurated part with a view to ascertain the state of the vessels; but I think I have seen the veins much thickened in their proper coats, not in the part itself, but in the sound texture in its vicinity. In the soft cancer, which particularly affects the stomach, I have repeatedly seen vessels, supposed to be

veins, thickened and enlarged, and on two or three occasions, a cream-like fluid was found in them.

Scirrhosities are most frequently found in the situations enumerated under the last head, viz. the pylorus, the caput cæcum, and in the course of the rectum, which may be attributed so far to these parts being more exposed than others, to be irritated by the substances which have to pass through them. Scirrhosities may also, however, exist in other parts, more particularly near the cardiac orifice; they are sometimes extensive, so much so as to involve the whole of the stomach, and sometimes a large portion of the intestine.

Fungous excrescences, of a cancerous nature, are rarely met with in comparison to the scirrhous indurations; nevertheless they have been found in every part of the alimentary canal, and were probably denominated polypi by the older writers. Brechet has lately described a case, which appears to me to be of this kind, under the name of polypus, which extended from the cardiac orifice into the duodenum. This kind of affection is noticed in Professor Monro's excellent work on morbid anatomy of the gullet, who has denominated it the melt-like cancer. It certainly so far answers the description, because it is white and soft; but being fibrous, cannot be washed away or softened down like a melt; it rather resembles a young placenta well macerated. Cancerous excrescences are also sometimes found in the rectum. Meckel says they are more frequently seen in this part of the bowel than any other; but they differ considerably from those found in the stomach, which are more soft and spongy, and less pendulous. I have several times met with a white projection, almost the size of a pea, from the mucous membrane of the stomach and bowels. The base is sometimes broad, at others the tumours hang by a narrow pedicle. Perhaps this is the white tubercle of authors. I have a preparation shewing these bodies along with open cancer of the stomach; indeed my Museum is very rich in this department of morbid anatomy.

Symptoms of Cancer of the Stomach, &c.—In the early stages it cannot be distinguished from dyspepsia; and sometimes even to the very last the symptoms are not more severe. There is a preparation in my Museum, shewing a section of

the stomach, more than half an inch thick, exactly like fibro-cartilage; and although the whole stomach presented the same appearances, the symptoms were those of ordinary dyspepsia. In general, however, there are progressive emaciation, restlessness, fever during the night, thirst, sallow colour of the skin, and shooting pains extending in different directions from the part affected. In scirrhous or cancerous affections of the stomach, we are generally able to tell whether the cardiac orifice, or the pyloric, is principally affected; if the former, pain is experienced in attempting to swallow as soon as the article gets low down in the œsophagus, where it is felt to lodge; frequently the patient is obliged to force it up by eructation, from the pain excited by its presence, but which ceases as soon as the food passes into the stomach. The pain is sometimes so great, that patients avoid eating till nearly famished; and some have described to me, that they experienced as much difficulty in introducing a table spoonful of milk, or any other fluid, as from a mouthful of solid food. But when the disease is situated in the body of the stomach, the food may pass readily in, but occasions so much suffering, that the patient is obliged to discharge it by voluntary efforts to vomit; sometimes a considerable quantity of serous fluid is discharged by eructation, as in water-brash. When the pylorus is affected, it will be found that the uneasiness does not become very great for some time after taking food, particularly if motion be avoided; but at length the pain becomes intense, nausea is excited, and the only temporary relief for the unhappy sufferer, is to get rid of the offending matter by vomiting. On some occasions there is ardent thirst with burning pain, and the patient describes his sensations as if his stomach were corded to the spine. When he changes his posture in bed, he feels the stomach falling from side to side, in the same manner that a woman for some days after delivery feels the uterus. Feculent matter is occasionally vomited; this happened lately in a remarkable case under the care of Mr Mitchelhill, and to whose kindness I owe a valuable preparation of the parts. A large oval opening was found in the centre of a cancerous mass in the stomach, communicating with the transverse arch of the colon. In all cases the pain is increas-

ed more or less, on pressure; and in some the induration may be felt, but I imagine, only when the whole stomach, or a considerable portion, is affected. In one case the stomach was felt by myself and others at the umbilicus, and the woman placed our hands upon it; but in that instance the whole stomach was indurated, in some places thickened to the extent of more than an inch, with such a diminution of its cavity, that it could scarcely hold six ounces of alcohol thrown in, after it was removed from the body, in order to distend it. The immediate cause of death, in a considerable number of cases, is acute peritonitis, occasioned by the contents of the stomach passing into the abdomen through an ulcerated opening. This happened in the case alluded to above, and my Museum contains several such specimens.

Cancerous affections about the head of the colon and the rectum, but particularly the former, are apt to give rise to symptoms of ileus. There is in general great irregularity of bowels; they are either constipated or loose. The evacuations are more than usually fetid, and there is a pain of a shooting character in the situation of the disease. If in the caput cæcum, there are frequently considerable fulness, and increased tenderness on the application of pressure; if the disease be confined to the rectum, frequent tenesmus and excoriations about the anus may be expected, together with lancinating pains and considerable discharge of sanguineous-looking matter when the disease is far advanced.

Causes.—The disease appears to our senses to be produced by accidental causes; but it is probable, that as pathology advances, it will be found to depend upon some other circumstances, perhaps upon original formation, either independent of, or connected with, specific action in the capillary arteries or veins. The woman from whom the stomach was taken which was so much indurated, had been for many years a notorious dram-drinker; she attributed the commencement of her complaint, and I believe truly, to a blow received eight months before her death, in the region of the stomach. A gentleman who had a large cauliflower excrescence in the stomach, had been all his life fond of good eating and drinking, and perhaps rather indulging in these respects; yet he was

strong and healthy, and had no complaint till he received a fall from his horse one night returning home from a jollification. He pitched upon his shoulder, and sustained such a contusion, as induced him, I believe for the first time in his life, to seek for medical advice. The doctor purged him well with drastic medicines, till he made the poor man really sick, and then, being resolved to make a good job out of a bad customer, fancied he discovered some obscure disease of the liver, and as he knew mercury to be a remedy for affections of that organ, he mercurialized him well, so much so, that he kept up a salivation for many weeks. During this period, the patient felt for the first time that he had a stomach; his appetite became impaired, and as the doctor knew that tonics were good for that, he sent many bottles of such drugs. Bark, steel, and bismuth, were at last had recourse to, but, alas! the patient got weaker and weaker; the doctor grew tired of his patient, and the patient dissatisfied with his doctor, so that they parted, as it were, by mutual consent. Some time after this he fell under my care, when the symptoms of scirrhus of the stomach were so decided, that I had not the slightest hesitation in giving an opinion to that effect.

The history of both these cases is quite distinct; and a great many such might be quoted, in which the commencement of the affection could be traced to a particular cause; but it would be a pathological error to assert, that the disease in the one case was owing to the blow; or in the other, to the specific action of mercury.

Treatment.—Although no means hitherto devised will cure carcinomatous affections, yet a great deal may be done in the way of checking the violence of the disease, mitigating suffering, and prolonging life. The chief circumstance to be attended to, is, to avoid eating any article which is likely to produce irritation. In very bad cases, patients have been much benefited by ass' milk, and have even recovered considerable flesh and strength under its use; thin arrow-root and gruel are to be tried; if ass' milk cannot be procured, fresh whey, with or without an addition of cream, is to be substituted. If the body still emaciate, additional nourishment may be thrown into the rectum, in the shape of beef tea, mut-

ton broth, &c. The bowels must always be attended to; and the best manner of doing this is by an injection of senna and castor-oil, administered every second or third day, as may be necessary. If the patient be teazed with vomiting, and worn out by pain, the most likely method of allaying both, is to exhibit small, but repeated doses, of the sedative solution of opium, which, after trying every other means, I have found to be the best. Should the pain, however, still persist, a few leeches may be applied; or if the patient be very weak, contra-irritation is to be produced, with the ointment of the tartrate of antimony. Frequently, when the patient feels a little better after this treatment, his relatives will be found anxious to force nourishment upon him, such as beef tea, animal jellies, and even wine; but they seldom fail to produce an increase of suffering in severe cases; therefore physicians should be particularly careful to impress upon friends the necessity of attending strictly to the regimen prescribed.

CHAP. VIII.

DISEASES OF THE LIVER AND SPLEEN.

In this chapter, I shall treat of Inflammation of the Liver; Abscess; Tubercular Formation; and Scirrhus; also of Jaundice; Gall-Stones; and Diseases of the Spleen.

INFLAMMATION OF THE LIVER.

Acute inflammation of the proper substances of the liver is of comparatively rare occurrence in this climate; I believe that the peritoneal coat of this organ is more frequently the seat of the disease, and that inflammation of the liver is often confounded with functional and structural derangement in neighbouring organs. I have seen some remarkable cases of this within these few years. One dissection revealed pericarditis, another inflammation of the inferior lobe of the right lung, and a third a collection of matter in the thorax; all of which had been mistaken during life, and treated for hepatitis by sundry courses of mercury!

The liver, like other viscera, may be affected with inflammation in various degrees of intensity and extent of surface; and these will give rise to symptoms of corresponding severity; but it will be sufficient to describe the acute and chronic hepatitis.

Some are of opinion that acute hepatitis is an inflammatory condition of the hepatic artery, and chronic of the vena portæ; Winslow asserted, that each has its origin in the ramifications

of the vena portæ; but it is easier in such matters to make assertions than to bring forward good proof. The truth is, that we are ignorant of the matter; and although an interesting pathological question, yet it does not appear to me to be one of much practical importance, at least in the present state of our therapeutical knowledge.

Symptoms of Acute Hepatitis.—The acute and sub-acute varieties almost always commence with some chilly feelings, succeeded by heat of skin; furred tongue having a yellowish appearance; irregular state of bowels, the stools being generally costive, like whitish clay, or dark-coloured at first, and assuming the whitish appearance as the disease advances. Sometimes there are vomited and passed by stool, considerable quantities of dark-coloured matter, occasionally resembling grumous blood; but this generally takes place, it would appear, when there is great accumulation of blood in the liver, and also in the vessels of the mucous membrane of the intestines. The urine is scanty and very dark-coloured; the skin hot, dry, and harsh; there is some degree of dyspnœa and anxiety of countenance, together with nausea and vomiting, which are sometimes intractable, and considerable thirst. The pulse is sometimes, but not always, quick, strong, and hard. In the most acute form, the pain in the region of the liver is severe, increased on pressure, accompanied by swelling and tension of the abdomen; pain is occasionally experienced about the tip of the right shoulder, which is supposed by many to be pathognomonic of an affection of the liver; but nothing is more deceptive. The patient prefers lying on the right side. This complaint, whether slight or severe, is liable to be mistaken for affections of the neighbouring viscera, more particularly of the stomach and duodenum, and the serous membranes which cover both surfaces of the diaphragm, as well as inflammation of the lower lobe of the right lung. These are attended by some degree of cough, which, in many cases of hepatitis, is a marked symptom. A yellow discolouration of the skin, known in common language by the term jaundice, occasionally takes place in hepatitis, as does hiccup; but neither the one nor the other, nor both conjoined, can be said to be symptoms peculiar to hepatitis. When the inflammation affects the peritoneal coat of

the liver, the pain is much more intense, generally speaking, and the fever higher, than when confined to the substance of the liver. Nothing is more unsatisfactory than the result of external examination, made to ascertain the condition of the liver when suspected to labour under disease. The contraction of the muscles of the abdomen; distention of the colon or stomach; disease of the kidneys; a collection of matter in the thorax, pressing down the diaphragm, are all sources of deception. The patient is to be placed in such a posture as will relax the muscles of the abdomen, which will be best effected when lying in bed with the head and shoulders well elevated by means of pillows, and the knees drawn up towards the abdomen. In this position the examination is to be made; percussion is to be employed, to inform us whether there is any flatulent distention; and the patient should be fasting. He should be told to take a full breath, when pressure is to be made in the region of the liver, while the lungs are yet distended. With all these precautions, little satisfaction will in general be obtained from the examination, unless the liver be very large, because the right lobe is the part most frequently affected, which is concealed by the false ribs. The stethoscope will afford satisfactory negative information respecting the condition of the lungs. In the acute disease, the patient may die either from the rapid destruction of the liver, or from the extension of the inflammation to surrounding parts.

Symptoms of Chronic Hepatitis.—This disease is very slow and insidious in its progress, and uncertain in its termination. There is a dull dragging pain in the right hypochondrium, increased by any considerable exertion, attended occasionally by feverish symptoms, and a dry, parched skin, irregular bowels, scanty high-coloured urine, tympanitic distention of the abdomen, sallow countenance, and frequent attacks of jaundice. The pulse is not much affected, perhaps, for some time. On many occasions the patient is cut off by an acute attack of inflammation in a part of the liver which had not perhaps been previously involved in the disease, or from peritonitis, or from inflammation of the lungs or pleura. There may be pain in the shoulder, and sometimes a weakness of the right arm; the tongue is scarcely ever free from yellow fur, and is seldom

very dry; the appetite is bad, and an eruption very often attacks the face, and back between the shoulders, generally in the form of acne; the patient passes bad nights, although he may be able to attend to his ordinary affairs through the day, and is frequently teased with diarrhœa, tenesmus, and piles. In the chronic disease the patient may die dropsical, or sink under acute inflammation of the peritoneal coat.

We are assured by Mr Twining, (in his Clinical Illustrations, &c. p. 146.) that inflammation of the liver is often far advanced (in Bengal) towards suppuration without the patient having suffered much pain; but he has never known a case terminate in abscess, without being able by careful examination to detect the disease in progress, long before there was any reason to believe that suppuration existed. Among the diagnostic marks of central abscess of the right lobe of the liver, is a much greater degree of tension of the *right rectus abdominis* muscle than the left. (P. 148.)

Mr Twining introduces the subject of diseases of the liver, by remarking that they "occur so often among Europeans, in combination with the fevers and alvine fluxes of Bengal, that it is hardly possible to give a correct and complete account of hepatic affections, without alluding to the cases wherein fever or dysentery may have been the original or more important complaint, to which the liver affection has supervened." (P. 135.)

Appearances on Dissection.—The following are the appearances most frequently found in acute cases of hepatitis in this country. Adhesions between the liver and surrounding parts; fulness or enlargement, the organ having lost much of its elasticity; easily broken down between the fingers, its edges thick, and more rounded than natural. The colour will depend much upon the quantity of blood in the vessels of the organ; but in general it will be of a brighter red in the inflamed portions. It must, however, be kept in recollection, that venous engorgement produces discolouration of the liver, and sometimes reduces it into a pulpy state. In either case, the distinction between the red and whitish-yellow parts of the liver is destroyed. In those affected with jaundice, the colour of the liver will have a similar tint. The termination by abscess is by no means rare in tropical climates, and it is sometimes seen in

this country, although I believe that tubercular degeneration in a state of softening, is not unfrequently mistaken for abscess. This termination of hepatitis in the formation of abscess, is, however, not always fatal. The matter may escape in various ways—1*st*, Externally through the parietes of the abdomen, by the intervention of adhesive inflammation between the peritoneal surfaces. 2*d*, It has been expectorated, after finding its way through the diaphragm into the substance of the lungs. 3*d*, It may find its way into some part of the intestinal tube, and pass off by stool. I have seen instances of all these terminations, the patients recovering partially, but never completely, although permanent cures are said to have taken place after such events. The matter has escaped from the liver into the cavity of the abdomen,—into the thorax—the gall-bladder. Andral alludes to a case, in which an abscess of the liver communicated with the interior of the vena cava, and another with the pericardium.

Mortification is, I believe, unknown as a termination of hepatitis; it is often mentioned by the older writers, who called every part which was dark-coloured and soft by that term.

Under the sub-acute and chronic forms of hepatitis, there is perhaps a greater variety of morbid appearances. The following are the principal alterations observed, viz. enlargement; hardness; contraction; (atrophy;) granular appearance increased, sometimes diminished; red parts increased, and whitish; yellow parts diminished; or *vice versa*. We sometimes see the liver variegated green; a brick colour; sometimes there are darkish-red bodies in a yellowish ground, or yellowish bodies in a red ground, at others greenish bodies in a bright yellow ground. The whole liver is sometimes converted into a diseased mass, the surface of which looks of a mottled green, with projections from its surface, of different sizes; a section produces a thick, tenacious, bloody exudation, and when wiped away, leaves the surface of a curious variegated appearance, containing spots, some the size of a half-crown, others smaller than a sixpence, of a yellow colour, streaked with red and white lines, each spot appearing to have a distinct centre, with red and white lines running towards the circumference. In a case of this kind, of which I have

drawings, the cystic duct was destroyed, the gall-bladder much distended with dark-coloured viscid bile, and its coats greatly thickened. In many cases of chronic inflammation of the liver, I have distinctly traced increased vascularity in the vena portæ and its branches, together with thickening of the coats of the vessels to such a degree as to resemble layers of cartilage. Similar appearances are to be observed also in the lower animals.

Mr Twining mentions having observed tumours, varying from the size of a grain of barley to that of a bean, situated in the capsule of Glisson. According to this gentleman's observation two small bodies can always be found by dissection, which he believes are absorbent glands. One of these bodies is situated near the termination of the gall-bladder, in the *cystic duct;* the other at the upper part of the *ductus communis choledochus.* He thinks enlargement of these bodies, with inflammatory excitement about the capsule of Glisson, may cause an obstruction, and in some cases obliteration, of the biliary ducts. (P. 142.)

Causes.—There can be no doubt that the disease is more frequent in warm climates than in this country, and still more so in the East Indies than the West; which shews that heat alone is not a specific cause of hepatitis. Indolence, along with full living on high-seasoned food, and a neglected state of the bowels, are, I imagine, the principal causes of hepatitis in all climates; and when to these are added high temperature, atmospheric vicissitudes, and constant and copious perspiration, it is no wonder that the disease should be very prevalent among Europeans in India. We are assured by Mr Twining, that Europeans recently arrived in Bengal are very liable to liver diseases, from exposure to atmospheric vicissitudes, or to the common causes which produce fever in Europe; and that habitual plethora, and an abundance of stimulant food, beyond the real wants of the constitution, doubtless keep the greater number of Europeans in India in an almost perpetual state of high predisposition to inflammatory and suppurative disease of the liver. (P. 153.) In this country, dram-drinking is an alleged cause; but I believe this pernicious habit produces disease of the stomach more frequently than of the liver. A

congested state of the vessels of the liver must also tend to produce inflammation of its substance; hence it often succeeds to intermittent and remittent fevers. Various other causes have been assigned; but for these, and for many valuable observations, the reader is referred to the various works published by authors who have had the charge of sick in India. But it is with pleasure that I take this opportunity of earnestly recommending every medical man going to India, or any similar climate, to take with him Mr Twining's works. The London publishers are Mess. Parbury, Allen, & Co. Leadenhall Street.

I believe that women are more liable to diseases of the liver than men in this country, owing probably to their sedentary occupations; but it is confidently stated by Mr Twining, (p. 256.) that in India European women are less liable to *acute liver diseases* than men of a corresponding class of society, by reason of their more temperate habits of mind, as well as less exposure to the exciting causes, and more abstemious mode of living. But they are liable to insidious diseases of the liver after fevers, and in consequence of disorder of the digestive organs. Diseases of the liver are well known to be a frequent consequence of chronic phthisis.

Treatment.—The more intercourse I have with intelligent practitioners who have been in India, the more I am convinced that the action of mercury has been too much trusted to, to the neglect of the lancet, and particularly of local bleeding; and that drastic purgatives are too much in use. Therefore I would recommend the lancet, in the early part of the disease, to be used with decision; but if it be too far advanced, the application of leeches may be trusted to, together with gentle laxatives, frequently repeated, assisted by injections. I have a high opinion also of long-continued contra-irritation; but to act beneficially, it must be persevered in, and assisted from time to time by local abstractions of blood. Occasionally the solution of tartar-emetic may be given, if the stomach be not already in a too irritable condition. Mercury may be used, as a powerful assistant to these means, rather than as the principal remedy; perhaps it may be found in such cases to be more useful in restoring the proper functions of the liver, after diseased action has been reduced, than in re-

ducing that action itself. The warm bath is to be frequently employed. The diet should be of the blandest description, and the patient must avoid fatiguing exercise, particularly on horseback, for a considerable time after his convalescence.

" The object in the treatment of severe acute cases of hepatitis," says Mr Twining, p. 155. " is considerably to diminish the quantity of circulating fluid, and permanently to subdue the action of the heart and arteries ; and by abstaining from food, and taking very little drink, at the same time that we use purgatives, to keep the system so empty and low that absorption shall be performed with activity. This condition is to be maintained by a steady perseverance in purgation, and repeated vascular depletion, until we have effected the dispersion of the vascular turgescence, and absorption of that interstitial deposit, more or less of which exists in almost all acute inflammations of the liver, very soon after the disease commences. Supposing the patient to be first seen in the morning, an active purgative should be given, and he should be bled from the arm to one pound and a half, or two pounds. The bleeding must be repeated every six hours, until the pains in the side and fulness of epigastre are relieved. Three hours after the second bleeding, 20 leeches should be applied." Again, he states that " in all severe cases of hepatitis, the patient's life depends on systematic pursuance of general and local blood-letting, with quiescence, and strict attention to almost entire exclusion of food ; even drink should be taken in limited quantity while we are endeavouring to empty the vascular system." (P. 156.)

Mr Twining states, that when the disease is severe in India, removal to a colder climate is considered essential, and remarkable recoveries have taken place during the homeward-bound voyage.

It must not be supposed, from my statement regarding the limited use of mercury, that I have joined the standard of those, who pertinaciously resist the employment of mercury in all diseases, and who insist that every little eruption, or accidental disease of a bone, or chronic ulceration of the throat, is produced by the action of mercury, although the individual may not have taken a grain of it for twenty or thirty years.

It is said that mineral waters, as those of Cheltenham and Harrowgate, are found exceedingly useful in diseases of the liver, as also the nitro-muriatic acid bath; and I think benefit has been derived from the use of iodine, but it becomes me to speak doubtfully respecting these remedies. Chronic Hepatitis, and other diseased states of the liver, are to be treated pretty nearly upon the same principle; except drawing blood from a vein, which is rarely called for; whereas the action of mercury is likely to be more beneficial than in the acute forms of the disease.

Much mischief is done in this country generally, and particularly in South Britain, by the conduct of many medical practitioners, who denominate every little indisposition "a fit of the bile," and attribute a great deal too many of the phenomena that daily present themselves, to disorder of the liver. They either pour mercury quickly into the system, or keep people for months under the gentle influence of an alterative course of blue pill, with an occasional five-grain dose of calomel, followed by a drastic purgative next day. All this is too frequently done when nothing whatever ails the liver, the complaint consisting of a vascular state of the mucous membrane of the stomach and duodenum; the cause of which is perhaps some error of diet, or persevering in eating more than the wants of the system require, or drenching the stomach with too much liquid. Many examples of this description fall under my care annually; in which a properly restricted diet,—gentle unirritating laxatives,—a warm bath twice or thrice a-week,—and the application of a contra-irritant to the epigastric region, occasionally, for a month or six weeks, produce as much relief as can be expected after years of maltreatment and quackery.

I have a few words to say respecting scirrhus of the liver and tubercular formation. The true scirrhus of this organ is, I imagine, as rare as mortification; and as a congested appearance is often mistaken for mortification, so is tubercular formation for scirrhus. A diseased state of liver, corresponding to scirrhus in other organs, is, however, occasionally seen, and is to be distinguished by its indurated condition, and its white bands. Another appearance, similar in every respect to me-

dullary sarcoma, is occasionally observed, of which I have seen two or three instances, and possess drawings taken from two cases. Sometimes tubercular formation may be traced, extending from the peritoneum into the substance of the liver; the peritoneum having a thickened, opaque, and sometimes puckered appearance, occasionally contracted inwards, so as to give a resemblance of loss of substance from the discharge of an abscess. On some occasions, the tubercular masses project from the surface of the liver, producing a lobulated appearance. Sometimes, however, the peritoneum looks perfectly healthy, although there may be considerable enlargement of the organ itself; and when cut into, large tubercular masses are discovered, sometimes near the surface, at others deep seated, which look yellow, and resemble the general tubercular infiltration which takes place in the lungs. The liver is sometimes found studded with yellow bodies of different sizes and shapes. The organ is of a reddish tint, and these bodies look like yellow wax sunk into the texture. They are not like tubercles. Andral considers that they are merely the white substance in a state of hypertrophy. Laennec believed them to be an accidental tissue found in the liver, and termed the disease *cirrhosis*. Sometimes the peritoneal coat only is studded with tubercles of the miliary kind, in various degrees of progress, some being quite vesicular, and others crude.

We sometimes meet with a liver of a pale or bright yellow colour, exceedingly soft and tender, containing a large quantity of oil. This is called the fatty liver, and although most frequently seen in phthisical subjects, is yet met with when the lungs are not diseased. A liver in this condition, looks, when superficially observed, of uniform colour, but when minutely examined, there will be seen minute brown, red, or greenish spots or lines on a yellow ground. Sometimes the fatty liver does not exceed the natural size, at others it is greatly enlarged. I have seen one so large that its inferior margin extended rather beyond the brim of the pelvis. Another weighed nearly 16 pounds; large sections of this liver floated even in strong alcohol. Sometimes the fatty matter is not universally infiltrated through the liver, but deposited in small masses here and there.

A preparation of a diseased liver was presented to me some time ago, in which there was a large effusion of lymph thrown out between the diaphragm and the liver, with adhesions round the edges, which closely resembled a tuberculated liver.

Cysts containing hydatids are sometimes found in the substance of the liver, sometimes two or three in number, containing large quantities of these vesicular bodies. Various opinions are entertained respecting the origin of hydatids, but after an attentive consideration of the whole subject, and a minute examination of the bodies themselves, I think they are not animals, but ought to be regarded as diseased products like tubercles.

JAUNDICE.

It has been already stated, that jaundice is not an invariable attendant on hepatitis. It would seem occasionally to depend upon diseases of the gall-bladder and biliary ducts, perhaps inflammation. It is sometimes occasioned by obstructions of various kinds,—as thickening and obliteration of the ducts, and during the passage of gall-stones. I have seen jaundice, where no morbid appearance or mechanical cause of obstruction could be discovered after death. It must be confessed that much remains to be done in the anatomy, physiology, and pathology of the liver. Jaundice may be produced, however, by one or other of the following causes: diminished secretion of bile, greatly increased secretion, viscidity of the bile itself, acute or chronic disease of the liver and gall-bladder, inflammation and obliteration of the biliary ducts, obstruction from gall-stones, and possibly, by spasm of the ducts.

Phenomena.—Jaundice takes place, as has been already stated, as an occasional symptom of hepatitis; but sometimes it occurs suddenly in cases where there could have been no acute action, or disorganization of any kind, and preceded by languor, some degree of restlessness, diminution of appetite, flatulent distention, and other symptoms which attend indigestion, nausea, vomiting, and dull pain, or sense of weight in the right hypochondrium. The tongue is generally furred and yellow; the urine scanty, commonly of a deep yellow, sometimes tinged green, and occasionally like the

grounds of porter; bowels slow, and the evacuations whitish. The tinge of the skin is sometimes preceded by a tingling or itching of the whole body, and the colour of the surface is various, from that of pale citron, almost to black. The conjunctiva of the eye partakes also of the colour. Occasionally there is some fever, and the nights are disturbed. Jaundice sometimes comes on insidiously; at others, suddenly. Thus, I have known a man sit down to dinner in tolerably good health, and be soon obliged to retire, from feeling indisposed, with his whole surface suddenly tinged; the first circumstance which excited attention, was a remark which fell from himself, that the table-cloth was of a greenish colour. This observation leads me to remark, that I have known several individuals who saw every object discoloured.

Treatment.—The treatment of jaundice is not well understood. When it accompanies disease of the liver, it must be treated as a symptom; if it seem to proceed merely from functional derangement, the warm bath, one or two emetics, and continued laxatives, should be employed, together with a gentle course of mercury. If there be pain, the application of leeches may be necessary, conjoined with contra-irritation. Great attention must be paid to the diet also, which may be more or less antiphlogistic, according to the urgency and duration of the symptoms. The nitro-muriatic acid bath has appeared to be serviceable in many cases.

GALL-STONES.

As long as gall-stones remain in the bladder, they seem to be productive of little annoyance. I once found two hundred and forty in the gall-bladder of a subject, whose history was not known; but on several occasions, I have met with them after death, in which no suspicion of hepatic disease had existed. Sometimes there is only one calculus, which fills, or nearly fills, the gall-bladder; and I owe a very splendid preparation of this kind to the kindness of Dr Combe and Mr Cheyne of Leith.

Gall-stones create pain, it would appear, only when they are in the act of passing towards the intestine. In such circumstances, the patient is seized with violent paroxysms of pain,

during which his sufferings appear to be as great as any human being can well endure; he ascribes his sufferings to spasms. The abdomen is sometimes painfully distended by flatus; it is very curious, however, that the pulse frequently remains quite natural during a paroxysm, although sometimes it is rather accelerated. The bowels are sometimes constipated, at others diarrhœa takes place, and a considerable quantity of mucus is occasionally discharged.

Treatment.—We have to direct our attention, in this case, to moderate symptoms. Sometimes bleeding will be productive of relief; at others, it does not seem in the least to mitigate the patient's sufferings, but I conceive it to be good practice to open a vein, in a strong, plethoric person. The warm bath, and hot fomentations, are to be frequently employed. Large doses of opium are to be exhibited, and the bowels must be carefully and daily attended to. It may be mentioned also, that leeching and cupping are sometimes necessary.

INFLAMMATION OF THE SPLEEN.

It is not easy to determine when the spleen is inflamed, for when found diseased on dissection, there have been no symptoms during life, which could be said to indicate disease of this organ, more than any other in the abdomen. In all probability this matter is not likely to be discovered, until we know more of the physiology of this organ. It is occasionally found diseased in this country, but still oftener in warm climates, more particularly in situations where intermittent fevers prevail. It has been known to weigh above eight pounds; sometimes it is hard, but most generally we find it, when diseased, soft like a coagulum of blood; it is in such circumstances that the erectile tissue is best seen, a fine specimen of which is in my Museum. The spleen, like the liver, is also subject to the formation of tubercles, both in its substance and capsule. In two or three cases of tuberculated spleen, which were examined minutely, I found the tubercles almost spherical, each inclosed in a capsule.

Some time ago, a preparation was presented to me, of a large abscess in the spleen, the walls of which were partly

formed by the stomach and diaphragm. In the centre of the abscess, a portion of spleen, the size of a large nut, was found quite detached. In the thorax, the pleura covering the corresponding part of the diaphragm was inflamed, and the inferior surface of the right lung adhered. In this case, there were no symptoms to shew that the spleen was affected. The patient died after amputation of the leg, which was performed with great reluctance, after the occurrence of mortification, as the only chance of prolonging life;—extensive disease of the arteries was discovered. There is a splendid dried preparation in my Museum, showing the state of parts.

Inflammation of the spleen is *said* to be recognized by heat, fulness, and tenderness in the proper region, with pain on pressure; for instance, Cullen has given the following definition: "Pyrexia, tension, heat, tumour and pain in the left hypochondrium, increased by pressure, without any signs of nephritis."

Discharge of livid blood from the stomach and bowels has often been observed during life, in cases where extensive disease of the spleen was afterwards discovered on dissection; but the same thing happens from other causes.

A new light is likely to be thrown on this much neglected subject by the pathological investigations carried on by Mr Twining at the General Hospital at Calcutta. I feel that no apology will be necessary to my readers for the following long extracts from Mr Twining's work already quoted. I place more confidence in the writings of this gentleman, from the gratifying accounts I have from time to time received from several of my former pupils, of the zeal of the writer, and the correctness of his facts.

"Diseases of the spleen," says Mr Twining, "may be deemed important, not only by reason of their frequency, severity, and the danger with which they are attended in Bengal; but on account of the change which the constitution undergoes previous to their origin, and during their existence; as well as the modifications which they produce on the nature and tendency of other diseases, that may occur at the same time. Instead of viewing the enlargement of the spleen as the principal object for investigation, it will be consistent with a correct view of the disease now under consideration, to speak of the enlargement of the spleen, as one

of the phenomena usually attendant on a peculiar description of constitutional disorder. The characteristic symptoms of this disorder are generally debility, paleness, and a deficiency of red blood in the capillary system of vessels; this is most remarkable in the pale and bloodless aspect of the conjunctiva, hectic blueness, or pearl colour of the sclerotica, and chlorotic discoloration of the visage, tongue, and gums. The circulation is generally languid, and the extremities are apt to become cold; the skin pale, shrivelled, and arid. In the chronic disease, affecting emaciated subjects, we often find a dry furfuraceous desquamation of the cuticle. We sometimes see a chronic enlargement of the spleen, in adults of pale, sallow, and unhealthy aspect; who eat and drink as they did in health, and seem to endure the disease for many months without much suffering, except the inconvenience of a tumid belly, attended with shortness of breath, and occasional returns of indistinct ague. The disease is far more distressing to children; in them, if careful attention to diet and correct medical treatment be omitted, the enlargement of the spleen, and corresponding decay of general health, are in most cases progressive, and they sink into a state of marasmus. In fact, a person who has arrived at a mature growth and strength, may exist for a while, with a degree of induration and enlargement of the spleen, which is incompatible with growth, or even the continuance of life, in those below puberty, for we find that children with this disease, soon become poor, languid, weakly creatures; whose breath, and the exhalations from their bodies, have a nauseous sickly odour, indicative of the unsound state of their constitutions. This distressing and obstinate malady is not peculiar to the natives of this country, nor is it confined to the poorer orders of Europeans. I have observed the disease in its severest form, to come on after fevers, affecting the children of wealthy Europeans, who lived in every comfort, and were attended with the greatest care. It is not unfrequently accompanied in such patients, by the extreme degree of constitutional disorder, which marks its advanced stages in the poorer classes of natives.

"Females affected with enlargement of the spleen, are liable to suffer from amenorrhœa; and cases of spleen disease, in which the periodical return is not obstructed, may for the most part be considered as having a favourable prospect of recovery. During the continuance of vascular engorgement of the spleen, patients are very prone to foul sloughing ulcers, from slight wounds or bruises; and when local inflammations exist, those peculiar characters of active inflammation, and that healthy constitutional energy on which the deposition of coagulable lymph depends, and by which we find injuries repaired, and the extension of ulceration as well as the progress of sloughing arrested on ordinary occasions, seem to be in great measure, if not entirely subverted.

"Blood drawn from veins varies much in appearance; sometimes it coagulates imperfectly, and no serum is separated; in other cases the cruor is black and soft, and after being exposed to the air, its surface does not generally assume that more florid colour which we observe on the top of a coagulum of blood drawn from the vein of a healthy person, and it seldom exhibits a buffy coat, except when ardent pyrexia is present, or when the disease is attended with acute pain in the side. The serum, when heated, coagulates as firmly as that of a healthy person, but the coagulation is more friable, and less tough; and this coagulated albumen frequently has a slightly yellowish appearance, sometimes it has a greenish colour.

"Several of the characteristics of scorbutus are present during the vascular engorgement of the spleen: there is a tendency to hæmorrhage from slight causes or injuries; leech bites, blisters, and issues, are apt to ulcerate during the rainy season; and at times the slightest ulcerations are apt to slough. Foul gangrenous ulcers of the lips and gums, are liable to form in consequence of slight local irritation, (and often without any obvious cause,) whereby the jaw bones become carious, and exfoliate, and the teeth fall out. Hæmoptysis as well as hæmatemesis occasionally occur, when the spleen is very large, and probably the blood which is vomited, sometimes flows into the stomach from vessels communicating directly with the splenic vein, as the intumescence of the spleen has been observed in some cases to be immediately reduced by these evacuations of blood. It is true, that profuse hæmorrhages from the nose, lungs, or stomach, sometimes suddenly destroy life; but we see other cases, where the functions of the system not having been much disordered previously, the patients recover quickly after these profuse losses of blood; and the disease of the spleen is thus entirely cured. The results of these spontaneous hæmorrhages should not be forgotten, in deciding on our plans of treatment in ordinary cases of spleen disease.

"Most patients with enlargement of the spleen, are affected with a short and imperfect respiration; the general appearance of the patient evincing that decarbonisation of the blood is insufficiently accomplished, and every attempt to take active exercise, excites panting and distress at the chest. Among the usual attendants on vascular engorgement of the spleen, we may observe impaired appetite, difficult digestion, and imperfect assimilation of the food. There is generally despondency and depression of spirits; inactivity of body and torpor of mind, with much muscular debility; and this latter symptom is remarkable, although the patients be not much emaciated. When active pyrexia is not present, the urine is pale, often copious. In the latter stages of the disease œdema of the feet is present, and sometimes the face and eye-lids are swollen. The majority of protracted cases that terminate fatally, suffer from dysentery, or dropsy of the belly; and when the abdomen is much distended from this latter cause, the superficial veins on the side of the chest and belly appear large and numerous; showing the extent and degree to which the circulation in internal organs becomes ultimately obstructed.

"Diseases of the spleen often occur in conjunction with dysentery, intermittent and remittent fevers, scorbutic affections; and sometimes with diseases of the liver.

"The tumefaction of the spleen occasionally comes on very suddenly, in the course of remittent fevers, in Bengal; and in a few days the enlargement can be seen as well as felt, extending far below the cartilage of the left false ribs. The degree of enlargement which takes place is variable; it is very common to see the spleen extending downwards on a level with the umbilicus; and laterally, from its usual situation, as far as half-way between the cartilages of the ribs and navel. In extreme cases the diseased spleen fills more than half the belly, extending to the right of the navel, while its lower extremity reaches the left iliac region. Several cases of this enormous tumefaction, may be seen every year in Calcutta; and some of them recover. Besides the globular tumefaction of the spleen above mentioned, there is a more oblong enlargement, in which the anterior edge of the organ is felt deeply indented with fissures. In this description of disease, there is more induration than attends the globular tumour; and the patients are cured

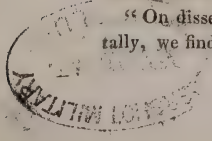
with greater difficulty. This is considered by the native practitioners, a very dangerous and intractable form of the disease.

"The greater number of cases of the affections above described, are unattended with local inflammation; although there is almost always morbid sensibility on pressure being made over the left hypochondre, during the early stages of enlarged spleen; and sometimes slight pressure over that part causes exquisite pain. Splenitis, or acute inflammation of the peritoneal coat of the spleen, would appear to be a rare disease; it sometimes exists without much enlargement of the organ, and then the symptoms very much resemble pleuritis of the left side; doubtless splenitis is occasionally cured, by the antiphlogistic treatment pursued, when pleuritis is supposed to exist. Pain in the left shoulder is rarely present.

"The progress of vascular engorgement of the spleen is more or less rapid, according to the injury which the constitution may have suffered from damp climate, and the nature and duration of the fevers which the patient may have recently suffered.

"Enlargement of the spleen sometimes appears as an idiopathic disease in children, and in persons of delicate and feeble constitution; and is produced by the combined influence of a damp climate, variable temperature, want of exercise, unsuitable clothing, and insufficient nourishment, during the slow and silent influence of long-continued grief and distress of mind; the secretions generally appear to be perverted, the cutaneous circulation becomes languid, healthy transpiration obstructed, and then we often find enlargement of the spleen take place in Bengal. The disease, when dependent on such causes, is always difficult to cure. The most part of the cases of vascular engorgement of the spleen in this country, follow intermittent and remittent fevers; and tumid spleen may be stated as the most invariable consequence of acute and debilitating diseases, among children of weak constitutions in Bengal. The same sort of enlargement takes place here in the spleen of adults, in consequence of various debilitating diseases, (but more especially after protracted remittent and intermittent fevers,) which we occasionally meet with at all seasons; but they are seen in their worst forms about the latter end of the rains, and commencement of the cold season; just when concentrated exhalation and considerable diurnal changes of temperature co-exist, which repress the action of the skin, and force the circulating fluids on the internal organs of the body. At that season of the year congestive fevers are frequent, and lamentably fatal at the low and damp situations in these tropical regions. These fevers prevail not only in the country forming the delta of great rivers, but in the marshy situations at the foot of hills and mountains, where the soil is composed of alluvial and vegetable remains, washed from the neighbouring hills into situations where there is no drainage, and an imperfect ventilation. The assemblage of constitutional symptoms described in the foregoing pages, constitutes the endemic cachexia of those tropical countries that are subjected to paludal exhalations. The enlargement of the spleen, is the most frequent attendant on this cachexia; and its increase, or subsidence, generally corresponds with the unfavourable or favourable changes which are taking place in the constitution. It is however proper to observe here, that the constitutional symptoms sometimes exist in a very marked degree, where neither enlargement, nor morbid sensibility of the organ itself, are very palpable.

"On dissection of subjects in whom disease of the spleen has terminated fatally, we find a considerable variety in the morbid appearances of that organ:



which may be described under the following heads; the most frequent diseased appearances being placed first in order.

"1.—A soft rounded enlargement of the spleen, the texture less firm than in the healthy state, and easily broken if the finger be pushed abruptly against it. In some cases the part is so much softened, that it resembles a great clot of blood, wrapped in a thin membrane; this varies in colour from black, to brown or blue, and in the extreme degree of softening, when we attempt to lift the tumid spleen, the fingers are thrust through the membrane, and the organ breaks down in the hands, becoming a putrid gore. This soft globular enlargement, from vascular engorgement of the spleen, most commonly attends, or follows, the severe remittent fever of the rains and cold season, when that disease attacks weak and unhealthy young persons.

"2.—Oblong enlargement of the spleen; the organ being more firm in texture than in its natural state, its edge thin and notched; the colour being sometimes a pale brown, though more generally a dusky red. This morbid change of structure, would appear to be the result of more slow and gradual degeneration, which in its earlier stages has probably been attended with some inflammatory condition of the internal structure of the spleen: in such cases we also find evidence of superficial inflammation, attended with adhesions to adjacent parts, more frequently than in the rounded enlargement from simple vascular engorgement.

"3.—Opaque patches of various sizes; some of these extend over half the convex surface of the spleen, and are nearly 1-8th of an inch thick; they may be deemed the result of albuminous depositions during superficial inflammation.

"4.—Adhesions of the peritoneal coat of the spleen to contiguous viscera; which adhesions are by no means a general result of tumid spleen in Bengal.

"5.—In a few old cases, we find a more indurated friable spleen, that breaks when handled without much force, like a piece of old moist cheese.

"6.—Still more rare, is the firmer induration intersected with septa of condensed fibrous structure; to which we give the name of scirrhus.

"7.—Tubercles of various sizes, generally small, and of grey or brown colour.

"8.—An organized coagulum in the splenic vein.

"9.—Encysted tumours.

"10.—Abscess of the spleen.

"The four last-mentioned morbid appearances are extremely rare in Bengal.

"Besides the above appearances of disease, we sometimes see an uniform pale white, or milky colour of the peritoneal coat of the spleen; which tunic is unusually tough, like a thin bladder that had been dried and afterwards wet in hot water, the substance of the spleen being soft and flexible. This has been observed in the *post-mortem* inspection of persons who had been long subject to agues. In patients who have suffered from spleen disease, and are destroyed by a purging, numerous small ulcers are found on the internal membrane of the great intestines, while the peritoneal coat appears either quite healthy, or paler than usual: the mesenteric glands in such subjects are often enlarged.

"Our treatment of the early stage of enlargement of the spleen, must depend much on the nature of the co-existent pyrexia, and the degree of morbid sensibility when pressure is made over the left hypochondrium; as well as the nature of other acute symptoms that may be present. We would also be much guided

by the degree of plethora, and general condition of the patient. But mercury must never be used with a view to cure the diseases of the spleen.

"The treatment found most useful in that modification of enlarged spleen, which consists in vascular engorgement of the organ, is perseverance in a course of purgative medicines, combined with bitters, and some preparation of iron, of which small doses of the sulphas ferri appear to be the most efficacious. My usual formula, for cases where there is not much pyrexia, is, Pulv. Jalap.—Pulv. Rhu. Pulv. Columbæ—Pulv. Zinziberis.—Potassæ supertartratis, ā ā ℥i. Ferri sulphatis ℥ss.—Tinct. Sennæ ℥iv. Aquæ Menthæ Sativæ ℥x. Misce.

"This prescription is called the spleen mixture.* The dose is one ounce and a half for an adult, at 6 A. M. and repeated at 11 A. M. daily. For children, the doses are regulated so as to produce not less than three, and not more than four stools daily. This medicine acts as a purgative, tonic, and diuretic. The purgative properties in the two first articles in this prescription, will be assisted by the cream of tartar, while that medicine with the jalap generally act on the kidneys; the principal effects of the other ingredients, may be referred to their tonic and astringent properties. The cure of the enlarged spleen, may probably be in some measure owing to the effects produced on the circulation in that organ, by the frequent application of a powerful astringent to its immediate vicinity. The natives of this country are decidedly of that opinion; for, on administering remedies containing sulphate of iron in spleen disease, the patient is commonly directed to lie on the left side, that the medicine may flow to that part of the stomach in contact with the spleen. I have formerly used the above prescription with treble the proportion of sulph. ferri now directed; and on dissection of some young subjects who came under my care in an advanced and desperate stage of the malady, and who died of the diseased spleen while taking the mixture with the larger proportion of sulphate of iron, I found the stomach quite white, and exceedingly contracted, more resembling a man's thumb than a young child's stomach. I now consider the smaller quantity of sulph. ferri more proper for ordinary cases; and sometimes add ℥i. of pulv. scammon. comp. to the above mixture, for patients who are very costive, and require stronger purgatives. On the other hand, in very delicate and emaciated subjects, who are easily purged, it is requisite to substitute compound tincture of cardamoms for the tincture of senna; and if there be any disposition to paroxysms of intermittent fever, I add to the mixture the same quantity of quinine as it contains of sulphate of iron.

"When the disease is obstinate, there is an advantage in changing the prescription occasionally; and after the above has been used for 10 days, the patient, if an adult, is directed to take eight grains of compound extract of colocynth, with two grains of gamboge, in pills, at bed-time; and 20 drops of tinct. ferri muriat. in a wine glass of water, with ℥ i. of tinct. gentian. comp. at 7, and repeated at 11 A. M. These medicines are to be continued for five days; and then, after taking the spleen mixture for ten days more, the patient is ordered to take ℥ss. of the powder of black myrobalan, with ℥ss. of black salt, every morning; and eight grains of compound extract of colocynth, with two grains

* The efficacy of preparations of iron in the cure of enlarged spleen, is pointed out by Magnatus, in his Thesaurus de Materia Medica, vol. II. page 901, as well as in Pinel's Nosographie Philosophique, vol. III. page 547. See also Celsus de Re Medica, lib. iv. c. i. sect. 5.

of sulphate of iron, and two grains of aloes, in pills, at bed-time. Thus, for two-thirds of the time the patient is taking the spleen mixture, with the occasional change to another medicine for a short interval, whereby the efficacy of the principal remedy is not weakened by its habitual use. It cannot be of importance to adhere invariably to a precise number of days in using each prescription, but an occasional change is requisite; and at any time during the treatment, if the patient becomes feverish, the above medicines are omitted, a dose or two of jalap is given, and leeches or V. S. employed. In a few cases we find enlarged spleen attended with cough, and the febrile stage of catarrh; and these cases are better treated for a few days by V. S. or leeches, purgatives, and tepid bath, before we begin the mixture containing sulphas ferri.

"As a general plan of treatment for Europeans, those adult subjects who are not much reduced in strength, must be bled from the arm, and have from four to ten leeches applied over the region of the spleen every second day, for a fortnight. Should there be pyrexia, the V. S. should be repeated once or oftener; the blood should always be taken while the patient is in the recumbent posture, and it is seldom requisite to take more than one pound of blood at a time from an adult. In all cases where fever exists, or V. S. is requisite, I have found much benefit from directing a purge of compound powder of jalap, or of scammony, with cream of tartar, and a grain of gamboge, to be repeated for two or three days before the sulphate of iron was administered in combination with bitters and purgatives, as above directed.

"In the treatment of diseases of the spleen, a careful attention to regulate the patient's diet is of the utmost importance. During the continuance of fever, the nature and quantity of food must be directed with reference to the degree of pyrexia, and symptoms of local inflammation that may exist. When patients not much reduced in strength are suffering from the early stage of vascular engorgement of the spleen, and having only occasionally slight pyrexia, it is advisable that the medicine should be given twice a-day, so as to operate freely three or four times; no meat should then be allowed; they must live on tea, bread, sago, gruel, and chicken-broth or kid-soup, in very small quantity. But in the more chronic cases, where we must patiently wait for slower changes in the constitution, and the gradual removal of the enlargement of the spleen, the mixture is given once daily, in the morning, and in such doses as to act less powerfully only twice a-day. It is then not inconsistent to allow some roasted or boiled meat, and curry. A small quantity of Port wine and water, or beer, is also taken with benefit at dinner-time, in most cases where meat can be allowed with propriety.

"Natives suffering under the early stage of spleen disease, attended with fever, live on barley-water, sago, bread, and *coee*, or parched rice; but in more chronic forms of the disease, they may with safety be advised to eat their usual curry and rice. It seems generally admitted that milk is improper food for patients labouring under disease of the spleen, and I am now quite satisfied that the prohibition of milk is almost always justifiable. The native practitioners also prevent patients from eating fat, or oil, although castor-oil is often administered by them as a purgative, and with great benefit."

PART III.

DISEASES OF THE ORGANS CONNECTED WITH THE RESPIRATORY SYSTEM.

CHAP. I.

GENERAL REMARKS ON DISEASES OF THE RESPIRATORY SYSTEM.

In approaching the subjects which are to be treated of in this part of the work, I gladly seize the opportunity of expressing the greatest admiration of the talents and powers of observation of the late M. Laennec, and of acknowledging that he is the individual of this age to whom the science of medicine stands most deeply indebted. I know not which to admire most,—the extreme patience with which he carried on his investigations in diseases of the chest, or the zeal and tact which he displayed in surmounting the obstacles which must have daily come in his way.

The diseases of the chest were once the opprobrium of medicine; and although we are still liable to be mistaken, yet by percussion and auscultation, we are enabled to judge correctly of the nature and seat of some affections, which otherwise would be mere matter of conjecture.

It is scarcely more than half a century, since Avenbrugger suggested the probability of ascertaining the state of the organs within the thorax, more perfectly, by percussing the chest with the points of the fingers. M. Corvisart translated Avenbrugger's Treatise into French, and subsequently brought the practice of percussion into general use and great repute. It must be confessed, however, that percussion is a much less satisfactory practice than auscultation, either with or without

the stethoscope, which instrument is the invention of Laennec, and which is now too well known to require any description in this work.

A great deal of opposition has been made, and many frivolous objections have been urged, against the employment of auscultation, principally by three classes of practitioners. 1*st*, Those who are too well employed, and who have not time to learn any thing new. 2*d*, Those who are dull of hearing, or devoid of the power of discriminating between sounds which have some resemblance to each other. 3*d*, Those who are too indolent or too old.

With respect to the first class, I need not say much, as no observations of mine will improve such medical men, by inducing them to pay more regard to the science than to the trade of the profession. But as to the second class, I have only to observe, that it is too bad for men who are deaf, to decry the employment of a means which is found to be so advantageous in practice; and the only method by which they can be silenced, is for others to state their defect,—a task, which, though ungracious, I shall not shrink from performing in respect to those whose statements are likely to influence the too numerous "herd of imitators" in the profession. In this class, there are some who can hear perfectly well, but who, from the want of what is called a musical ear, are incapable of discriminating sounds, in the same manner as some are unable to detect the difference between a hard and a soft pulse, or a full and a sharp pulse; or as others who, from a defect in the organs of vision, cannot see any thing twenty yards distant. Such individuals, then, will never be capable of availing themselves of this additional means of investigating diseases of the chest; but they have no right to prejudice others in the profession, who are perhaps too happy to avail themselves of any excuse which is likely to save trouble. In the third class of objectors, I have placed the indolent and the aged. With respect to the first of these, I have to remark, that the public have not so much to complain of the ignorance of medical men, as their indolence and want of zeal; and it is as difficult for a camel to pass through the eye of a needle, as to make an indolent physician active and zealous; therefore it is not to

be wondered at, that they should advocate the advantages of remaining ignorant. As for many of the aged opponents, they act, no doubt, upon the principle which is observed in old dogs, of not learning new tricks. Before quitting this unpleasant part of the subject, it is proper to impress on those who are fond of indulging in sarcasms against the cultivators of pathology, that ridicule is not argument, and that perfection is scarcely to be expected from auscultators, any more than from others in the profession. It is also very unwise in any lecturer to decry auscultation, and to bring forward solitary instances of mistakes made by those who use the stethoscope, or pretend to use it, in the investigation of diseases of the chest. It is not very prudent in any one to run the risk of instilling bad principles into the minds of students, by recommending them to make a shew of using the stethoscope in practice, and "thereby pretend to see as far into the heart of a stone as their neighbours." What would be said by such an individual, if the mistakes made by medical men in practice, were brought forward by those inimical to the profession, in proof of the inefficacy of physic and surgery! I have seen the wrong leg amputated by mistake, and the operation of lithotomy has been frequently most cruelly bungled; yet no one is entitled, from the knowledge of many such facts, to say that surgery is altogether useless, or that there are not some clever surgeons.

Some individuals have stated objections against the use of the stethoscope; they say it requires a life-time to arrive at any thing like perfection. I have already shown that it requires great patience and good ears to learn it at all, and that those who possess neither the one nor the other, will never be able to use it advantageously. But if the difficulties of any task were allowed as an argument against making attempts to overcome them, it may be asked, what would become of all the sciences?

They also state, that it is indelicate to examine the chest of a female with this instrument in any circumstances; and that it frequently cannot be done, in consequence of the fatigue it occasions to the patient. With respect to the first, I have to observe, that it is an objection which I should have

expected from one individual only in the British Empire—Sir Anthony Carlisle. I feel convinced that every professional man of experience will join me in the following statement, that fewer objections are started by females possessing delicate and innocent feelings, to any kind of examination which their medical adviser may think it necessary to propose for their advantage, than by those who unfortunately are differently constituted. It is to be lamented that this objection is brought forward more in the spirit of special pleading, than with a view to benefit either science or good morals. It may be maintained, however, with truth, that the examination may be made in such a manner as not to occasion the slightest blush; the patient need never be exposed, the different sounds of respiration being sufficiently audible for all useful purposes, through the texture of an ordinary night-gown. Instead of meeting with objections on the part of females, it has always appeared to me that they were anxious the investigation of the nature and seat of any disease in the chest should be carried out to the most complete elucidation. Cases no doubt occur, in which it is inconvenient and painful to move the patient much; but these are comparatively rare, and must be so far disregarded when life is at stake.

I shall now turn to a more agreeable part of the subject, by shortly stating a few cases, shewing the advantages derived in actual practice from auscultation. A few years ago, I was requested to see a patient who had been under the care of several medical men, and by way of giving me every necessary information, his friends put me in possession of all the recipes which had been recommended;—they would have made a moderately-sized quarto volume. At one time, it was supposed that he had stomach complaint, and all known tonics were prescribed; at another, it was supposed to be scrofula, for which he took large quantities of the muriate of lime; at last, he was suspected to have diseased liver, and he got large quantities of mercury, and was several times completely salivated. Upon applying the stethoscope, I discovered a cavern in the superior lobe of the right lung, and was doubtful whether another did not exist in the left. Next day, I had the advantage of a consultation with Dr Scott, whose superior know-

ledge of diseases of the chest and stethoscopic tact, I am happy to have this public opportunity of acknowledging. He was merely asked to see a patient with me, without knowing the result of my previous examination, which he confirmed, with this addition, that he had no doubt of the existence of a cavern in the left lung: and it was afterwards proved to be correct.—A remarkable case was under my care some years ago, at a time when I was only beginning to make some progress in the use of the stethoscope. A man presented himself, with many of the ordinary symptoms of indigestion, and without a single sign indicative of disease of the lungs. I examined him carefully with my ear, with a view of perfecting myself in the natural sounds elicited by respiration, and the tones of the voice, when, to my astonishment, I thought I discovered a small cavern in the superior lobe of one of the lungs. At that time, Dr Wavel, an excellent stethoscopist, was a pupil at the dispensary. He was requested to examine the man, without knowing my suspicions. Upon comparing notes, he was of the same opinion. It was subsequently discovered that the man coughed a little in the morning, but not so much as to attract even his own attention; upon dissection, some months afterwards, our diagnosis was fully verified.

Dr Henry of Manchester, and others, will not forget the case I had occasion once to examine with him, in which we discovered empyema of the left side of the thorax, which had been treated for disease of the heart by the late Dr Buchan, because the pulsations were felt to the right of the sternum, instead of the left. By auscultation and percussion, we were enabled to state most confidently that there was extensive effusion, which pushed the heart to the other side of the chest. The patient did not survive above a fortnight, and the correctness of our opinion was fully proved, by the existence of an immense effusion in the left side of the thorax, amounting, I believe, to twenty or twenty-six pounds of fluid, with large masses of lymph.

Liver complaints are often confounded with disease of the lungs, in which it is of the greatest consequence to the patient, that the physician should be able to form a proper diagnosis, which he cannot do in many cases without the assistance

of auscultation and percussion. A case of this kind once fell under my notice. A physician treated a patient during some time for a pulmonic complaint, without knowing its exact nature or seat, which he could not fail to have discovered, had he been able to use the stethoscope. After a little time, the patient complained of uneasiness in the abdomen, and the liver was felt rather prominent on the right side, but pressure did not aggravate the symptoms. It then came out that the man had been in India for several years, and as that was the case, it was supposed he could not fail to have drank plenty of arrack, and consequently to contract an affection of the liver. He was accordingly salivated over and over again, but the enlargement continued to increase; and it may be briefly stated, that the man died. Upon dissection, his liver was perfectly sound, and it was found that the protrusion was occasioned by an immense effusion into the left side of the chest, which pressed down the diaphragm, and encroached upon the abdomen.

By auscultation and percussion, we shall be always able to discover the existence of collections of fluid in the chest, which by ordinary symptoms cannot be ascertained. Dr George Gregory, a late writer on the Practice of Physic, in his article on hydrothorax, or dropsy of the thoracic cavity, (627, ed. 1825,) states as follows: "*The diagnostic symptoms of this form of dropsy are very fallacious. Sometimes we are confident of finding water in the thorax, when that cavity is perfectly free from disease. At other times, we observe the thorax full, when we had no suspicion of the complaint existing.*" I have no doubt, after writing this paragraph, the author applied himself most assiduously to the acquirement of stethoscopic knowledge, without which no man can treat diseases of the chest with any confidence.

It is well known, that there is a great resemblance between the ordinary symptoms of inflammation of the pleura, and a painful affection of the intercostal muscles, which is called pleurodynia; the resemblance is so great, that it is impossible to distinguish the one from the other without the use of the stethoscope. Not long ago, I had three such cases within a short space of time; one only proved to be pleurisy,

and that was the one in which I least expected to find it, from the slightness of the ordinary symptoms.

I have seen many remarkable cases of chronic inflammation, and I believe extensive ulceration in the wind-pipe, which the ordinary symptoms announced to be the most hopeless cases of phthisis pulmonalis ;—there was cough, expectoration tinged with blood, emaciation, debility, rapid pulse, with bad feverish nights, attended by profuse perspiration. By the sound of the respiration, and the resonance of the voice, I was enabled to assure myself that the lungs were as yet sound, and they were all cured by means to be afterwards described in the proper place. Every year I see several cases of chronic bronchitis, which have been mistaken for phthisis, many of which were cured or relieved by the appropriate remedies, which must have terminated fatally if managed as cases of phthisis. In the treatment of inflammation of the substance of the lungs, it is of the utmost consequence to be able to tell whether the disease be extensive or not; whether it be in the first stage, that of active sanguineous engorgement; or in the second, that of solidification ; whether the disease be advancing or declining, which can be done by no other means than auscultation and percussion.

It has already been attempted to be shewn, of how much advantage it is to sound the chest in cases of fever.

Much injury, it is to be apprehended, will result for some years to come, by individuals *pretending* to use this instrument, and pronouncing confident opinions as to the nature and seat of diseases, who are unacquainted even with the natural sounds of respiration, and who, as I have often seen, do not really know how to hold the stethoscope. Few individuals can acquire the power of using the instrument advantageously from books, without the personal assistance of some one already instructed; and I have known several gentlemen give up the task as hopeless, because they could hear nothing, but who resumed it, upon being properly assisted and instructed.

On the other hand, candour compels me to mention, that much mischief has been done by some able stethoscopists pretending to accomplish too much; according to them, auscultation is infallible; but that this is not to be expected from

any human invention applied for the purpose of investigating or curing diseases, I need not waste time to prove. That it is a *great assistance, as an additional means of diagnosis* in diseases of the chest, no man possessed of the spirit of truth, who has fairly given it a trial, or who has followed the practice of those who can avail themselves of auscultation, will deny. I maintain, without the fear of contradiction, that perhaps one of the greatest advantages to be derived from auscultation, is that which enables us to obtain negative proof, in cases where we have failed in discovering positively the seat of the disease. For example, if a medical man be called to a case which has either been pronounced to be consumptive, or in which a doubtful opinion has been given, it is truly delightful for all parties, if he be able to give a positive assurance that the lungs are not affected, although he may not be able to tell exactly the seat of the disease.

Some medical men allege, that they can discover every condition of the lungs, quite well enough for all practical purposes, by ordinary symptoms; therefore I shall now take a view of these symptoms, for the purpose of shewing the fallacy of this statement. The following symptoms are supposed to denote inflammation of the lungs, in the most satisfactory manner: *Cough, dyspnœa, pain in the thorax, quick and strong pulse.* When these symptoms exist, they are supposed to be peculiar to inflammation of the lungs; that is to say, when they exist, inflammation is present, and when they do not exist, the disease is absent. Experience enables me to state, that not one of these symptoms, or all taken together, indicate inflammation of the lungs in any of its textures, and that inflammation may exist without any of them being well marked; hence it is, that physicians are so often astounded with the appearances on dissection, which they did not anticipate from the mildness of the symptoms; and hence it is, that they too often decry the usefulness of morbid anatomical inquiries.

Cough is not peculiar to disease of the lungs, it may be produced in a violent degree by any kind of irritation about the larynx, epiglottis, and even the pharynx; mere excitement of the circulation frequently produces cough, as well as diseases of the heart. I shall afterwards prove, that in some of the

most hopeless cases of inflammation of the lungs, the patient *cannot* cough, in consequence of which the danger is greatly increased; *therefore cough cannot be said to be peculiar to inflammation of the lungs.*

Dyspnœa is as frequent a consequence of disease of the heart, as of the lungs; mere excitement in the circulation will produce dyspnœa. One of the most distressing cases of dyspnœa which I ever had the misfortune to witness, dissection proved to depend on an enlargement of the gland, which fills up the angular space at the bifurcation of the bronchial tubes. From a mechanical cause, also, œdema of the inferior, as well as the superior aperture of the glottis, frequently produces a fatal dyspnœa. In many cases of extensive and severe inflammation of the bronchi, after free expectoration, the dyspnœa subsides so completely, that should a symptomatical physician happen to make his visit at that period, he will pronounce the patient to be convalescent, when perhaps within an hour or two he will be no more. Even in pneumonia, if the inflammation be confined to a small part of one lobe, which it frequently is, there is little dyspnœa; and the whole of one lung may be destroyed by chronic inflammation, without occasioning much difficulty of breathing, if the disease go on very slowly; *therefore dyspnœa cannot be said to be peculiar to inflammation of the lungs.*

With respect to *pain*, nothing is more deceptive, for there may be severe pain in the chest without inflammation, as has been already stated with regard to the affection denominated pleurodynia. In bronchitis there is little or no pain; in pneumonia the pain is generally little marked; and, contrary to the statement made in all systematic works respecting the severe pain in pleuritis, experience enables me to state, that it may go on most extensively, even to a fatal termination, without much complaint; hence we often see on dissection, most extensive adhesions of long standing, between the *pleura pulmonalis* and *costalis*, in individuals who had never been known to experience any serious indisposition till their last illness; *therefore pain cannot be said to be peculiar to inflammation of the lungs.*

It has already been shown, that a hot skin is not an invari-

able phenomenon in inflammation, and the same remark may now be made with respect to inflammation of the lungs; indeed, in bronchitis, the heat of skin is frequently below par.

It has also been stated, that the pulse cannot be depended upon as a certain indication of inflammation; and in addition to the remarks already made in this work, I may now state that hypertrophy of the left side of the heart frequently produces a strong bounding pulse, and also dyspnœa, when there is no inflammation going on in any organ of the body; and, on the other hand, dilatation of the ventricle will produce a weak, soft pulse, at a time perhaps when every form of pneumonic inflammation is going on most rapidly.

All Cullen's definitions, in the sixth chapter, which treats of pneumonic inflammation, are therefore erroneous, as well as the following paragraph, (p. 335.) "Pneumonic inflammation, however various in its seat, seems to me to be *always* known and distinguished by the following symptoms:—pyrexia, difficult breathing, cough, and pain in some part of the thorax." It will be admitted that Cullen was at least as wise, talented, and observant as any of his symptomatical brethren of the present day; yet he confesses that he could not ascertain the seat of the disease by the ordinary symptoms, as will be seen upon perusing the 334th paragraph. "Under this title I mean to comprehend the whole of the inflammations, affecting either the viscera of the thorax, or the membrane lining the interior surface of that cavity; for neither do our diagnostics serve to ascertain exactly the seat of the disease, nor does the difference in the seat of the disease exhibit any considerable variation in the state of the symptoms, nor lead to any difference in the method of cure." Proving by the latter part of the paragraph that he must have been an indifferent practitioner, as the inflammatory affections of the lungs require a different treatment in each stage; bronchitis demands a different plan from pleuritis, and pneumonia from either of the others. I venture therefore to predict, that in a few years, practitioners, even those who now ridicule auscultation, will be compelled, in self-defence, to have recourse to this additional means of diagnosis, or they will lose their practice.

These observations were written several years ago for the first edition, and it is pleasing to perceive, notwithstanding all that many individuals have done against the practice of auscultation and percussion, that science has been steadily advancing; this means of diagnosis has been widely extending, and the influence of truth has been greater than that of prejudice.

CHAP. II.

DISEASES AFFECTING THE MUCOUS MEMBRANE OF THE AIR-PASSAGES.

Under this title, I shall treat of Catarrh ; Bronchitis ; Inflammation of the Larynx ; Croup, and Hooping-Cough ; together with the affection which is sometimes known by the term Crowing Disease, at others Spasmodic Croup.

CATARRH.

When a patient is seized with chilliness, followed by sneezing, slight fever, impaired appetite, hoarseness, occasionally loss of voice, and cough, he is said to have catarrh, or a common cold. The bowels are generally out of order, and he has an exacerbation of fever and dyspnœa at night. The cough is sometimes slight, at others severe. A slight degree of wheezing is heard, and the disease has a salutary termination in a day or two by expectoration of mucus, which is discharged by occasional fits of coughing.

Sometimes the disease is confined to the mucous membrane of the nose and frontal sinuses, and is known by the vulgar denomination of "cold in the head."

When catarrh is a general complaint, attended by considerable prostration, and constitutional symptoms which are otherwise slight, the disease has been denominated influenza. After a careful perusal of all the accounts which have been given of the various epidemics of the disease called influenza,

I was unable to draw pathological conclusions as to the exact nature of the affection, till I suffered from an attack of the epidemic that prevailed in 1833. Till then I had considerable doubts as to the pathology of the disease, and gave the subject the go-by in the former editions of this work. In this affection there are all the symptoms of catarrh, with extreme oppression and prostration of strength. These two symptoms, I can confidently state, are owing, in general, to an irregular distribution of blood and accumulation in the lungs. My attack came on suddenly when taking a pleasure ride. I was only three miles off, and could scarcely sit my horse on my way home, from debility; more than once I was on the point of giving it up as hopeless. There were no violent symptoms, but I recollect well an impression on my mind at the time, that I pitied every one who had a tendency to phthisis pulmonalis, as from the dyspnœa and the oppression in the chest, I thought the lungs were much loaded with blood. After my recovery, I saw many cases of the disease, and became convinced that my impression when sick myself, was correct. Many did die of phthisis, and I believe more were lost in consequence of that epidemic than of the Cholera which had preceded it. The treatment in slight cases consists in confinement to bed or to one room, diaphoretics, laxatives, and rubefacients, together with a strictly antiphlogistic regimen. In severe cases, one bleeding is serviceable, followed by the treatment mentioned above. Convalescence should be well established before the patient is allowed to expose himself; and it is safe to establish an irritation on the chest by means of antimony ointment.

In considering the pathological difference between catarrh and bronchitis, it must be recollected, that in both, the same membrane is affected, but in different parts; I imagine, that in the former, the diseased action is a very slight sub-acute inflammation, affecting the mucous membrane of the nose, frontal sinuses, the larynx, and trachea. Slight cases of inflammation of the membrane lining the bronchial tubes, frequently pass also by the name of catarrh, instead of bronchitis.

Causes.—Exposure to cold, particularly alternations from heat to cold, with insufficient clothing, is the chief cause of

this complaint, as well as bronchitis. It would appear to be of no consequence how cold is the air we breathe, provided the surface of the body be properly protected; hence bronchitic affections are, comparatively, of less frequent occurrence in very cold regions than in this variable climate.

Treatment.—We are seldom called upon to treat a simple catarrh, unless severe constitutional symptoms have been excited by some accidental cause; as constipation; a hard fit of drinking; or a load of indigestible food in the stomach; when an emetic, the antiphlogistic regimen, a proper course of laxatives, diaphoretics, and confinement to the house, will generally be all the treatment necessary. It may be mentioned, however, that the warm bath ought to be recommended when it can be conveniently obtained.

We are sometimes consulted in consequence of the inflammation having extended into the air-tubes, aggravated by exposure in cold damp weather, when we shall frequently find the disease has already made great progress. This is particularly the case with the children of the poor, who are badly fed and clothed, and for whom little permanently effectual can be done.

BRONCHITIS.

I shall treat of bronchitis in two forms, the acute and chronic.

Ancient physicians appear to have been unacquainted with the nature and seat of bronchitis, although many of them have recorded cases of the disease. Sydenham has described the affection as it sometimes occurs under the title *Peripneumonia Notha*, and it will be found, that most authors since his time have copied his description, still remaining ignorant of the nature of the affection. Hoffman's *Catarrhus Suffocativus*; Lieutaud's *Fausse Peripneumonie*, and *Catarrh Suffocante*; Sauvage's *Rheuma Catarrhal*, do not differ from Sydenham's *Peripneumonia Notha*. Morgagni, who may justly be regarded as the first, and one of the most successful cultivators of morbid anatomy, seems to have been in some measure aware of the nature of the chronic form of this disease; and he has

given ample proof, in his second book, that he knew it had been confounded with phthisis.

Cullen has given a good description of the symptoms of the disease, under the term used by Sydenham, *Peripneumonia Notha*, but has not added any thing to our knowledge upon this subject; and moreover he entertained erroneous notions of the true nature and seat of the disease. The same remark may be made respecting the later work of Dr Mason Good. The profession stands indebted to Dr Badham, now Professor of the Practice of Physic in the University of Glasgow, for pointing out the nature and seat of the disease, in a little work he published on bronchial inflammation many years ago. Before the appearance of this valuable work, the disease was very imperfectly understood by the best physicians of the day: and even now, it is surprising that bronchial inflammations are so much overlooked and neglected, particularly in fevers, rheumatic, gouty, and erysipelatous affections, as well as in the course of surgical practice.

Pure surgeons (by which I mean surgeons who pride themselves upon their powers of cutting, and boast of their ignorance of every thing medical,) should be told, that they frequently submit patients to capital operations, who are at the same time labouring under extensive inflammation of the mucous membrane of the lungs, perhaps in a sub-acute form, and which does not give rise to symptoms sufficiently violent to attract the attention of their surgical minds. The patients become worse from the progress of the disease, or in consequence, very probably, of the agony and fright experienced during the period of a painful and tedious operation; the pulse becomes weak, the skin cool, the face either very pale or somewhat livid, and the wound, of course, puts on an unhealthy appearance;—adhesion by the first intention does not take place, and at the first dressing, the lips of the wound are found gaping, discoloured, yielding a foul discharge. In such cases, patients are too often drenched with wine and bark, and crammed with stimulating food, under the idea of preventing debility and putridity. Notwithstanding these remedies, the strength fails, and gin and brandy are in vain had recourse to; the destruction of the parts in the neighbourhood of the wound

takes place, and the patient dies from presumed gangrene, which is too frequently attributed to the bad air of the hospital. I do not mean to assert, that all cases which go wrong after surgical operations, are owing to bronchitic inflammation; but I maintain that many are, and particularly the cases in which erysipelas follows. But I will say more on this subject when treating of erysipelas in the 2d volume of this work.

Symptoms of Acute Bronchitis.—The symptoms excited by inflammation of the mucous membrane lining the bronchial tubes, vary according to the severity and extent of the inflammation. The tubes of one lobe may be affected, when the symptoms will be slight; the inflammation may be still more extensive, affecting perhaps both lungs, and the symptoms will be slight also if the diseased action be but moderate.

The acute form of the disease, which I am now to describe, commences with some degree of chilliness, succeeded by pyrexia, hoarseness, dyspnœa, and a dry cough; tightness, or sense of stricture in the chest, and oppression at the præcordia; prostration of strength; loaded tongue and costive bowels. An exacerbation is almost always observed at night. In a day or two, expectoration takes place, which relieves the patient for the time; the respiration, however, becomes more difficult, but the cough bears no proportion to the dyspnœa; the tightness about the chest is increased, along with a sense of suffocation, when the pulse becomes very rapid. The deadly paleness or lividness of the lips and cheeks becomes more apparent; the countenance more and more anxious; and the patient frequently requests to be raised, and to have more air. A loud wheezing may now be heard, even at a distance from the bed-side. The voluntary muscles of respiration are brought into play. The patient becomes insensible; rattling is heard in the throat; the extremities and face become cold and livid, a cold perspiration bedews the skin, and death soon closes the scene.

Sometimes cerebral symptoms take place, and headache is much complained of, which may be attributed to impeded circulation in the head. The wheezing is produced by the air passing through the diseased secretion in the air passages, and

may be heard by placing the ear to the chest, long before it becomes so severe as to be distinguished by any other means.

The cases of acute bronchitis most to be dreaded, are those in which, the oppression in the chest being more or less considerable, there is neither heat of skin, pain, nor much febrile movement in the pulse. In fact, these three symptoms may be said to be below par; no alarm is taken till suffocation is threatened, or some organic lesion has been produced; and when at length the signal of distress is displayed, it will be found too late to save the patient.

The disease is very fatal in infancy and childhood; and I shall now mention its course and progress at these periods of life. It commences in the same manner as in adults, like a common cold. The breathing becomes oppressed; all the voluntary muscles connected with respiration are called into play; the shoulders are in constant motion as well as the nostrils, and the abdomen becomes more prominent, by the increased action of the diaphragm during inspiration. Sore throat frequently accompanies the disease, and the child suffers so much pain during the act of coughing, that an attempt is made to suppress it; wheezing soon takes place, which is more decided than dyspnœa; expectoration is generally followed by mitigation of suffering, which continues for a longer or a shorter period, till more phlegm is formed. The mucus secreted in the air-passages, is frequently discharged by spontaneous vomiting, exactly as occurs in hooping-cough. Children under four or five years of age, can rarely be made to spit up the phlegm, unless assisted by the act of vomiting; but they swallow it after it has been discharged from the air-passages. Children refuse food, but drink greedily until the disease is far advanced, when they cannot take a long draught from want of breath. An infant at the breast sucks pretty well during the first stage of this affection; but subsequently, although it seizes the nipple with avidity, it cannot suck for any length of time, perhaps not for more than ten or fifteen seconds, when it will be observed to bite the nipple very forcibly, and discontinue sucking; it will cry, and be observed to throw its head back quickly, and will continue in this position for some time, even after the cough has produced

the expulsion of the mucus.* If the disease remain unsubdued, the dyspnœa increases; the face shews the usual marks of impeded circulation; the surface becomes cold; the extremities sometimes swell, and the child dies from suffocation. Very often, the sound of the voice and the cough are as shrill as in the croup, with which disease bronchitis is sometimes confounded. Dr Hastings, in his very excellent work on the lungs, has given a concise account of a variety of acute bronchial inflammation, to which young children are peculiarly subject, which I have often had occasion to see. Although more dangerous, the symptoms are not of corresponding severity; in truth, it is a sub-acute inflammation of the bronchial membrane throughout the whole extent of both lungs. No severe symptoms are excited as long as expectoration continues free, and is discharged with ease; but should the mucus by any accident increase, the cough at the same time ceasing, speedy death from suffocation inevitably follows, unless vomiting be excited, which seems to have the effect of emptying the air-passages of the secretion. Other cases take an unfavourable turn, by the inflammation becoming more active, from some accidental circumstance, such perhaps as exposure to cold. Cases of this sort are most common in spring and autumn. In the acute bronchial affections of children, there are often considerable variations in the state of the breathing and the pulse,—the latter depending in a great degree on the former. The breathing for several hours continues free and easy; afterwards it gradually becomes less so; and at last great difficulty takes place suddenly, even so as to threaten immediate suffocation. These exacerbations appear to be owing to three circumstances; 1*st*, Collection of mucus in the bronchi; 2*d*, Increased circulation through the lungs; and *lastly*, Venous congestion. Children so affected, soon fall into a comatose state; the face, which for some days perhaps had been quite pallid, now becomes livid, or a dark circle shews itself round the mouth, and the child sinks in the manner already described. In some urgent cases, the fatal event takes place in sixty or seventy hours from the time alarm is

* This position seems to facilitate the passage of air into the lungs.

taken; the majority of cases, however, are not so rapid, the course of the disease being from five to fifteen days; but when it is protracted, other structures generally become involved, the inflammation spreading by contiguity; and the same happens in adults.

In all affections of the lungs, particularly in the acute, the bowels become constipated, and the evacuations fetid.

The expectoration in bronchitis is at first scanty and viscid, particularly so in the most acute cases; by degrees it becomes more copious and less viscid, and therefore more easily expectorated, till at last it is discharged in considerable quantity, having the appearance of starch mixed with small bubbles of air, and occasionally streaked with a little blood, or is discharged in the form of pellets. If the case go on well, the expectoration gradually diminishes, and becomes slightly yellow in colour; the patient is troubled with the cough and expectoration in the morning only; at length they cease entirely. Sometimes, however, the acute disease runs into the chronic form, which is now to be described.

CHRONIC BRONCHITIS.

Like other chronic inflammations, this affection sometimes succeeds to an acute attack;—sometimes, however, it takes place as a slow and insidious inflammation of the bronchial membrane. This form of the disease may affect individuals of all ages; but it is most frequently met with in old people, and those who, by occupation, are exposed to the inhalation of dust. It sometimes succeeds also to the eruptive fevers; and frequently co-exists with diseases of the heart.

It is occasionally mistaken for phthisis pulmonalis; and is one of the morbid conditions of the organs within the chest, which give rise to the symptoms denominated asthma; and is likewise a frequent cause of dropsical affections.

When the disease succeeds to acute bronchitis, the fever declines, but the pulse for some time continues frequent; the cough and difficulty of breathing continue, but they are always relieved for a considerable time, after free expectoration. The patient still has night exacerbations and disturbed sleep,

which, however, gradually decline with the disease. The expectoration still copious, becomes opaque, yellow, sometimes puriform, and has occasionally a greenish hue; at last it diminishes in quantity. The appetite returns; and although weakened by copious night perspirations, and which take place during the day upon making the least exertion, the patient is sensible of gaining some strength. Gradually all these symptoms cease, and some individuals appear to undergo a perfect cure; but in general they are not so fortunate, for during the subsequent part of their lives, exposure to the night air, an easterly wind, or a humid atmosphere, occasion a renewed attack; and with many, the same effect is produced by eating indigestible food, or by neglecting the bowels. Now and then, therefore, they become indisposed; the voice becomes hoarse; the cough short and croupy, with more or less oppression in breathing, attended sometimes by febrile symptoms. In the chronic form of the disease, the expectoration takes place in a much shorter time from the commencement of the indisposition than in the acute; sometimes in a few hours: it is viscid at first, but soon becomes copious, and the patient is relieved by the discharge. One attack leads to another, till at last the individual is always affected with some degree of dyspnœa,—he is almost constantly coughing and spitting, and is unable to lie in the horizontal posture; he feels great difficulty in mounting a stair,—and is said, in short, to have an habitual asthma.

I have stated, that Morgagni seems to have been well acquainted with the phenomena of chronic bronchitis. We are told, for instance, by Morgagni, that Valsalva examined the body of the Bishop of Imola, who was supposed to have died of phthisis, having had considerable expectoration before his death; but he did not find tubercles, or any other disease, in the structure of the lungs.

In the acute and chronic forms of bronchitis, cases now and then present themselves, in which the expectoration is very small in quantity, so as sometimes scarcely to be perceived, when the disease has been denominated "Dry Catarrh," and "Dry Asthma."

Stethoscopic signs of Acute and Chronic Bronchitis.—Percus-

sion affords little information in any of the forms of bronchitis; but auscultation enables us to determine the stage and extent of the disease, even before the symptoms are completely formed. In the first stage of inflammation of the mucous membrane of the bronchi, it becomes somewhat swollen, probably from the increased quantity of blood in its vessels, and its surface dry; upon applying the ear to the chest, either with or without the cylinder, instead of hearing the natural soft murmur of respiration, a louder sound strikes the ear; sometimes like a snore, at other times sibilous, or resembling what may be called a somewhat harsh, brazen sound. It is more sonorous, and flatter, according to Laennec, in proportion as the mucous membrane is swollen, and its surface dry; and he states,—"When so strong as to resemble the prolonged scrape of the bow on a large violoncello string, or the note of the wood-pigeon, there are usually redness and swelling at the bifurcation of some of the principal bronchia." *

As the disease advances, it has been stated that wheezing takes place, which is produced by the passage of air through the diseased secretion in the bronchial tubes; this is called "the mucous râle or rattle," which in many cases is so loud, as not only to be heard on entering the room, but to be felt by placing the hand upon the chest, which experiences a vibration during each inspiration and expiration. In some cases, we may find the respiration suspended in a portion of the lung for an hour or two, which becomes restored after a severe fit of coughing. In this case, percussion may be of some assistance to us. These occasional interruptions to respiration, are owing to a plug of tenacious mucus or lymph closing up the entrance of a tube; or it may be completely filled with viscid matter.

In chronic bronchitis attended with expectoration, we have in some cases the same mucous rattle over the whole thorax. When there is no expectoration, then we hear pretty loud snoring, which is denominated the "dry sonorous rattle;" occasionally it resembles the cooing of a wood-pigeon; and

* Forbes's Translation, p. 67.

sometimes at the very top of the inspiration, a sound is heard like the chirping of a bird.

Occasionally a prolonged hissing sound is perceived, flat or sharp, of greater or less intensity, called the dry "sibilous rattle," which has a resemblance also to the chirping of birds. And sometimes a sound is heard, which Laennec has aptly compared to that which is "emitted by suddenly separating two portions of smoothed oil stone, or by the action of a small valve." In truth, it is what may be denominated a clicking sound. Laennec states, that these sibilous sounds are probably owing to minute portions of very viscid mucus, obstructing more or less completely the small bronchial ramifications, or to a local contraction of the small tubes, from thickening of their inner membrane.

Appearances on Dissection, and Pathological Remarks.—On opening the thorax, we generally find that the lungs do not collapse from the pressure of the atmosphere, if the individual have died from suffocation in consequence of the engorgement of the bronchi with matter. In some cases, in which the cough has been severe, the surface of the lungs looks white, as if coated with a layer of coagulable lymph; but on examining this appearance more closely, it is found to depend on an effusion of air beneath the pleura, forming that peculiar condition termed "*emphysema.*" On opening the trachea, it will sometimes be found filled with matter; but in general, it is merely coated with thick, viscid mucus, which, when wiped off, shews some degree of redness, increasing towards the bifurcation. The bronchial tubes are found more or less filled with matter, which is sometimes like mucus or pus; occasionally it has a mixed appearance, which is appropriately denominated muco-purulent; sometimes it is tinged with blood, and looks reddish. This secretion is found occasionally even in the air-cells, distending them, giving a uniform granular appearance to the whole of the part affected; and there can be no doubt, that this is one way in which tubercular formations take place in the lungs. Upon washing away the puriform matter, the mucous membrane itself will be sometimes found intensely red; at others, of a dark red, like lees of wine; the discolouration increases in the course of the ramifications.

The texture of the membrane is observed to be thickened, more especially in chronic inflammation. Ulcerations are frequently seen at the great bifurcation, rarely lower down. The pulmonary substance will be found more or less gorged with blood, and sometimes œdematous. These are the ordinary appearances observed in bronchitis; the following are to be regarded as accidental. False membrane is sometimes found in the trachea, the same as in croup; the lungs are seen in different stages of inflammation, from active sanguineous engorgement, to complete disorganization; pleuritic effusions are also sometimes found, and enlargement of the bronchial glands. In the brain we frequently see marks of impeded circulation, sometimes inflammation. In the abdomen, the liver is sometimes found gorged or altered in structure, and the mucous membrane of the stomach and bowels shews various degrees of vascularity, and even ulceration. These appearances in the liver and bowels, are in all probability owing to long-continued impeded circulation through the lungs, and a diseased condition of the blood.

In chronic bronchitis, we sometimes find considerable dilatation of the larger tubes, which is perhaps chiefly brought about by long-continued distention,—a remarkable case of which once occurred to me. In this instance, I declared that there was a cavern in the superior lobe of the right lung, which upon dissection turned out not to be the case, but there was an immense dilatation of the bronchial tube; thus mistaking bronchophony for pectoriloquy. Another case occurred to Dr Alison, in which the dilatation was great, and the tubes affected numerous. A portion of the lungs is in my Museum, and a delineation is given by Mr Spittal, in an excellent work on auscultation, to which I can with confidence recommend my readers. I have likewise two preparations exhibiting numerous portions of false membrane, like the ramifications of an artery into very minute branches, which were formed in the bronchial tubes of a boy who died of chronic bronchitis.

In making *post mortem* examinations, with a view of discovering the nature and seat of bronchitis, these accidental morbid alterations of structure should be kept in mind, along

with the symptoms and progress of the case ; because although they may form the most prominent appearances on dissection, and are no doubt in many instances the cause of death, yet they are only to be regarded as the effects of the original disease. Nay, sometimes an individual labouring under acute or chronic bronchitis, may have expectorated freely, immediately before death, when we shall find little or no effusion in the bronchial tubes, and sometimes very little redness. It is proper to state also, that notwithstanding the attention which has been paid of late years to the pathology of the lungs, there is still some ambiguity connected with this subject, evinced by the fact, that dividing the pneumo-gastric nerves in animals produces dyspnœa, change of voice, and effusion into the air-passages.

Of all the symptoms, wheezing is the one which may be said to be peculiar to bronchitis ; cough and dyspnœa, it has already been shewn, are common to all diseased conditions of the lungs, and not of the lungs only, but of other organs. Some assert, that the wheezing is owing to spasm, but this is not the case, for we find that it is greatest before expectoration takes place, the patient afterwards being pretty free from it till a fresh secretion collects in the air-passages. Dyspnœa has also by some been attributed to spasm. Reisseissen thinks he has ascertained the existence of circular fibres in the ramifications of the bronchi, commencing at the point where the cartilaginous circles terminate. Laennec supposes that he has also proved the existence of these fibres upon branches of the bronchi, of less than a line in diameter ; and therefore concludes, that spasmodic contraction of these fibres occasionally produces dyspnœa. I am far from admitting this structure in the present state of our knowledge, but even if it were so, it is of little consequence, when there is an increased quantity of mucus in the tubes themselves, offering a sufficient mechanical cause for the phenomenon itself, and for the exacerbations and remissions, which are so frequently observed in all the forms of bronchitis. Whatever consequence may be attributed to such a structure, in accounting for the symptoms in some cases of asthma, it is of little practical importance in acute or chronic bronchial inflammation.

It has been already shewn how the brain becomes affected during the course of bronchitis, when severe pain in the forehead is often remarked. Some suppose this is owing to inflammation of the membrane lining the frontal sinuses; but this is not the case, for if it were, this symptom would be most severe when patients are affected with what is called "a cold in the head;" besides which, it is a different kind of pain. That which proceeds from the irritated state of the membrane in the frontal sinuses is pungent, producing a flow of tears, exactly as when we smell volatile salts. The lividity of the face and lips, and mucous membrane of the mouth, is owing to the want of the usual changes which take place on the blood in the lungs.

Treatment of Acute Bronchitis.—This depends exactly upon the period of the disease, the extent of the morbid action, the state of the cough, the expectoration, and the previous health of the patient. Bleeding is certainly not necessary in every case of bronchitis which comes before us, particularly in one that is slight, and confined to a small part of the lung; but if the whole lung be affected, and more especially when both organs are implicated, bleeding is to be had recourse to early and decidedly. It is a very doubtful remedy when the second stage is far advanced, and highly injurious in the last. I know no disease more under management by any remedy, than bronchitis is by bleeding, if performed in the first stage, or during the first part of the second; and there is no case in which the stethoscope is more useful, for without it, this disease may advance through the first stage before it is detected by the ordinary means of investigation. Many assert, that bronchial inflammation will run through a certain course in spite of every remedy; and so it will, if the inflammatory stage is nearly over before discovered, or if bleeding be not used in a decided manner. Although late bleedings are to be especially condemned in this disease, yet cases do occur, where the lungs become suddenly congested with blood, in which a well-timed venæsection is of signal service.

In the first stage of bronchitis, when both lungs are extensively affected, one bleeding will in general suffice, and we need not be afraid to carry it nearly to syncope, as long as the

air-passages are free from mucus; but after it has collected in considerable quantity, and I speak more particularly with respect to double bronchitis, sudden death may be the consequence, by robbing the patient of that strength which is required in coughing to produce expulsion. In bronchitis, we can scarcely ever determine the necessity or the propriety of bleeding by the ordinary signs, because in some cases the disease may be very extensive, without violent symptoms; in others, it may be very slight, and the symptoms very severe, owing, perhaps, to a disordered state of the stomach and bowels, or to some other, perhaps slight cause; and it is of great consequence to know when to desist from further depletion.

Cullen, in the 381st paragraph, states, that "in case the fever, catarrhal and pneumonic symptoms, are immediately considerable, a blood-letting will certainly be proper and necessary; but where these symptoms are moderate, a blood-letting will hardly be requisite; and, when *an effusion is to be feared*, the repetition of blood-letting may prove extremely hurtful." Which statement sufficiently proves that he must have practised with great uncertainty. We are to decline bleeding, not because we *are afraid of producing effusion*, but when we know that it already exists in considerable quantity in both lungs.

Leeching or cupping is very seldom serviceable in this disease; but in children who are too young to be bled at the arm, leeches are to be applied; and we have sometimes great difficulty in determining the number;—suffice it to say that it is better to apply few when in doubt upon the subject, and to repeat the operation in a short time. If consulted early, we can make a near approach to the effects produced by general bleeding, by applying a considerable number of leeches at one time, and stopping the discharge soon, so as not to allow the body to be slowly drained of blood; but even in children it is far better to draw blood from a vein, when it is practicable. I speak from the result of considerable experience.

Next in point of importance to blood-letting, in pulmonary inflammation, stands antimony, as a contra-stimulant; this was well known, and constantly acted upon by Cullen, Fordyce, and others, in the last century, and it surprises me

greatly to hear this practice attributed to Italian and French physicians. Digitalis is of little use, unless given in considerably larger doses than are generally recommended; but it is a dangerous remedy when the air passages are much loaded. Colchicum has been highly recommended in this disease by a friend, who states that its effect on the pulse and the other symptoms, are sometimes quite remarkable. Emetics are very serviceable in the first stage, and are absolutely necessary in the last, in order to clear the air-passages when the cough fails to do so; and are more particularly serviceable in childhood and infancy.

Purgatives were at one time thought highly injurious in all inflammatory affections of the lungs, but upon erroneous pathological views.

Expectorants and diaphoretics are more injurious than beneficial, except perhaps in chronic affections; and I have often had to regret the loss of much valuable time by trusting to their action.

Opiates are perhaps more frequently injudiciously administered in inflammatory affections of the lungs, than in any other class of diseases. They are sometimes exceedingly serviceable, but in the great proportion of cases they are injurious, and in some instances are the cause of death. These observations apply more particularly to the disease under consideration. Nothing can be more detrimental than opiates, in the last part of the second, and during the whole of the third stage of bronchitis, when the patient's life depends upon the continuation of the cough and the expectoration; many an individual has perished in consequence of a three hours' sleep. But opiates are sometimes useful, in the first stage, after the violence of the disease has been reduced by the lancet; they subdue irritation, the continuance of which would perhaps lead to a relapse. In the last stage also, they are occasionally serviceable when there is little or no secretion in the air-passages, and when there is considerable irritation and a violent cough, which, if not mitigated, keep the patient from sleep, and wear him out.

Contra-irritation is another powerful remedy in pulmonary inflammations; but experienced practitioners agree in condemn-

ing the too early application of blisters, which, in truth, ought to be employed oftener as a measure of safety, than of necessity. In acute cases, we cannot wait for the contra-irritation produced by antimony ointment, a blister should therefore be applied.

Attention, during the whole period of the disease, should be paid to the temperature of the extremities; and a warm bath has sometimes excellent effects, in removing irritation, and promoting the comfort of the patient.

The regimen should be strictly antiphlogistic; but stimulants are occasionally very serviceable in the last stage. The patient is sometimes so weak and languid, that he cannot make any voluntary efforts to cough, upon which, perhaps, his life depends. In such a case, a stimulant, frequently repeated, occasionally snatches an individual from the grave. It is difficult, however, to account for the stimulating treatment practised by Laennec, who, in recommending the use of the spirituous preparations, such as warm wine, burnt brandy, and punch, says—"This plan is unquestionably eminently successful in a vast number of cases. By it we frequently observe a cold which seemed to threaten great severity, cured all at once in the course of a single night," (page 70.) But he observes in the subsequent page, that this plan is most successful in the very onset of catarrh; and that it is much less so after the supervention of the loose expectoration. Whether this be owing to difference of climate or constitution, it is difficult to determine; but that the disease of which I have been treating, demands very different means on this side of the Channel, I need not waste time to prove.

In the treatment of acute and sub-acute pulmonary inflammations, it is necessary to keep the patient quiet in bed—every exertion must be avoided; the exercise of the voice is also injurious; and during recovery, it is essential to attend to the diet and clothing; the bowels are still to be regulated; and bitters are sometimes serviceable. In severe cases, I hold it to be of advantage to persevere for several weeks in supporting an eruption on the surface of the chest, by tartrate of antimony ointment, or croton oil, or the frequent application of mustard plasters, or stimulating embrocations. Change of

air, however serviceable it may be in some chronic cases, is often very detrimental in those now under consideration; unless it be from the smoky air of London to the country, and even then it is always doubtful whether the patient may be benefited or injured by the change.

Treatment of Chronic Bronchitis.—In the treatment of this form of the disease, we must ever keep in view, that patients are in danger of sudden attacks of acute inflammation, and vascular accumulations which may terminate fatally; or the substance of the lungs may become affected, by the diseased action spreading by contiguity; lastly, œdema of the lungs may take place, which is not an uncommon consequence of this affection.

General bleeding is rarely necessary, except in the following circumstances, viz. the occurrence of acute inflammation, sudden congestion of the lungs, or dropsy depending on bronchitis. Contra-stimulants are almost as rarely necessary as general bleeding. The frequent exhibition of emetics cannot be too highly extolled; they appear to be most serviceable at night, immediately before the usual hour of rest, and in the morning, particularly after a tolerable long sleep: their *modus operandi* has been already explained. Constant attention to the bowels is of the greatest utility; and the occasional use of the warm bath is serviceable when the skin is dry and harsh. Expectorants appear to be somewhat serviceable, and the best is squills. But I have seen expectorants used for a considerable time without any benefit, till after the application of a blister, or the use of the inhaler, when the discharge has become free and easy. Of all the remedies hitherto recommended for the cure of chronic bronchitis, the best is long-continued contra-irritation by a succession of blisters, and particularly by the application of antimony ointment, or croton oil.

The balsams have been strongly recommended for their peculiar efficacy in inflammation of the mucous membrane, more especially that of the lungs. Dr Armstrong has spoken very favourably of them in his work on Scarlatina, &c.; but I have no doubt, subsequent experience modified his opinions upon this subject. I have tried the copaiva in many cases in practice, without being able to discover its efficacy. Tar

vapour has been recommended as a sovereign remedy in phthisis, and there can be no doubt it has been beneficial; but the cases in which service may be expected, are those of uncomplicated chronic bronchitis. Good effects have frequently been produced by the *tinctura lyttæ*, but exhibited in doses two or three times greater than those commonly used.

If change of air be had recourse to, a warm situation should be chosen, with a dry sandy soil; patients should avoid exposing themselves at night, or during cold damp weather, particularly in this country, when the wind blows from the east. Warm clothing is highly necessary; but it is important that medical men should prevent the patient from being too much loaded; and the best way to accomplish this is, by recommending a leathern jacket and drawers, and to forbid a great coat, particularly if he be allowed to take walking exercise. I must refer the reader to Dr Forbes's translation of Laennec's work, for much valuable information on the subject of bronchial disease, and to the notes of the accomplished and experienced translator also, who has conferred a great boon upon British practitioners.

INFLAMMATION OF THE LARYNX.

This disease has a very close analogy to croup; which indeed seldom exists, without extending to the membrane lining the larynx; but as the inflammation is sometimes entirely confined to the latter organ, it is necessary to give a separate description of each disease.

Inflammation of the larynx is a common cause of death in small-pox and scarlatina, and it sometimes follows measles. When this disease occurs in the acute form, it is known by a painful sense of constriction in the throat, which is increased by pressing the larynx; speaking aggravates the pain, as does swallowing; the voice is hoarse; the breathing soon becomes laborious and shrill during the act of inspiration; there is considerable heat of skin, thirst, rapid pulse, and great anxiety. On looking into the throat, the fauces frequently look swollen and turgid, and of a dark red colour, or coated with lymph; but this affection of the throat is not peculiar to laryngitis, as the inflammation may be entirely confined to the larynx. In

some cases, the epiglottis is involved, which renders the motion of the tongue painful. The patient is constantly hawking, in order to clear the air-passages, and occasionally spits up a small quantity of thick tenacious phlegm. As the disease advances, the face becomes swollen and turgid, it has frequently a livid appearance, and life is quickly destroyed by suffocation. Convulsions occasionally precede death. This disease sometimes runs its course in from thirty-six to forty-eight hours.

A chronic form of inflammation of the larynx, although described by some as being of more common occurrence than the acute, is, I apprehend, less frequently met with: the mistake having arisen from its being confounded with the disease described by Bayle, under the name of *œdema glottidis*. That chronic inflammation, however, does take place, we have very good proof, from the ulcerations which are found in the larynx, and also round the glottis, which even destroys portions of the cartilages. In the chronic disease, particularly when attended with ulceration, there is pain ascribed to the part affected, great difficulty and pain in swallowing, hoarse voice and dyspnœa, with violent fits of coughing; the patient passes distressing feverish nights, and expectorates a scanty, sometimes sanious-looking, matter, which has occasionally an offensive odour. This form of the disease sometimes accompanies phthisis pulmonalis; whether it do so or not, the patient becomes emaciated, and dies with the usual symptoms of hectic fever.

On dissection, in the acute disease, the mucous membrane is found vascular, thickened, and rough from minute ulcerations, or it is covered with a thick exudation of lymph.

With respect to the treatment of acute laryngitis, as it is similar to that recommended in croup, I shall consider them together, after describing the latter disease.

The treatment of chronic inflammation consists in close confinement to one apartment, strict attention to diet and the bowels, *and silence on the part of the patient*. Frequent, almost daily application of leeches to the proper region, and a repetition of blisters to the back of the neck, tar, and other vapours, have been strongly recommended. When ulceration exists in the layrnx, the case may be considered almost hope-

less. Still it is our duty to do something for the patient. In this case the application of caustic has been recommended, and it is said often practised; but it is to be doubted whether a stick of caustic could be forced into the larynx without producing sudden death. Mons. Joubert of Paris has been very successful in curing ulcerations in the throat, and they say in the larynx likewise, by the application of a saturated solution of oxymuriate of mercury in pure nitro-muriatic acid.

CROUP.

This disease is of frequent occurrence in this country among children residing in damp bleak situations, particularly on the sea-coast; it consists of an inflammation of the lining membrane of the trachea, and is often connected with bronchitis and laryngitis, the one running into the other, so much so, that they frequently cannot be distinguished. It is scarcely a hundred years since this disease was first recognized, but the first good description was given by the late Dr Home. It is rather curious that croup is a disease almost peculiar to infancy and childhood, while inflammation of the larynx and bronchial tubes occurs at all ages. Although there are some instances of croup affecting adults,* yet it is rare to see it after twelve years of age. One attack predisposes to another; but as age advances, this susceptibility goes off. It is more frequently met with on the sea-coast than in inland districts, and in the neighbourhood of wet marshy lands than in dry situations; thus it appears to be more frequent in Leith than in Edinburgh, notwithstanding the high and exposed situation of the latter.

Dr James Hamilton jun. has stated, but perhaps inadvertently, that croup is a common disease in certain parts of Edinburgh. Above three thousand people were attended annually by my pupils for several years, and out of more than eighteen thousand patients we have not had above twelve cases of

* It would appear that General Washington, the liberator of America, and Joséphine Bonaparte, both died of this affection. The last fact is stated by Bretonneau, (at page 65.) on the authority of Béclard, who discovered the disease when employed in embalming the body.

croup; but I have frequently been asked to attend dissections of children, who were supposed to have died of croup, which proved on examination to be bronchitis.

Croup has been divided into three species, viz. the acute, chronic, and spasmodic. Under this last head, I shall take an opportunity of noticing the affection already mentioned, as first described by Bayle in the year 1819.

Phenomena.—It usually commences like a catarrh, the symptoms being more or less severe, with some degree of fever, preceded by chilliness; the voice soon becomes hoarse; febrile symptoms increase; and in a day or two, the breathing is more and more impeded, particularly during inspiration; at last the respiration becomes stridulous, and the voice shrill; a harsh, dry cough exists from the beginning, and when there is any expectoration, it has more or less of a muco-purulent appearance; sometimes small masses of lymph are discharged, which occasionally resemble portions of false membrane. As the disease advances, the expression of countenance becomes more anxious; the lips and cheeks have a swollen, livid appearance, alternating perhaps with a deadly paleness. The pulse is frequent and small, and occasionally intermits. There is prostration of strength, and restlessness; although the surface of the body be, generally speaking, hot, the extremities are frequently cold; at last, the body is covered with a cold, clammy sweat, and the child dies of suffocation. On looking into the throat, the fauces are sometimes found inflamed and swollen; but this is not a necessary part of the disease, it merely shews that the inflammation is extensive. Many cases of croup, however, which I have seen, appear to have been produced by the extension of inflammation from the throat into the air-passages. This was the case in the disease described by M. Bretonneau, and to which he gave the name of Diphthérite.* The course of the disease is various; sometimes children are cut off early from asphyxia, but in general it lasts from two to four days. In chronic affections of the trachea, the symptoms are less violent and urgent, but having, upon the whole, pretty much the

* Traité de la Diphthérite, par P. Bretonneau, 1826.

same character, viz. dyspnœa, shrill voice, and stridulous breathing. This is probably the affection that Dr Warren has called "bronchial polypus," and which he has described in the 1st volume of the Transactions of the College of Physicians.

Causes.—There can be no doubt that cold and moisture produce the disease, and that sometimes, from peculiar circumstances, a great many cases have occurred in the same district. The most remarkable epidemic appears to have been that which took place at Tours some years ago, and which is described by M. Bretonneau, during which one hundred and fifty individuals died. It affected adults as well as children, and was particularly severe in a French legion quartered in the district. This author supposes diphthérite to be contagious; but whether contagious or epidemic, it is impossible to determine. It sometimes succeeds to bronchitis, and also to severe inflammation of the fauces.

Appearances on Dissection.—On opening the trachea, false membrane is found lining the organ in various states; sometimes it is soft and diffluent; sometimes partial; at others extending beyond the bifurcation. Sometimes it is found of very considerable thickness and firmness, of a tubular form, corresponding exactly with the canal which it covers, and extending an inch or two into the bronchi; on some occasions, the first divisions of the tubes are as completely lined as the trachea. Frequently the larynx is similarly affected, but I have never seen a complete tube in this situation. On some occasions, bronchitis co-exists in one lung, or in both, which must always be kept in view, when considering the probability of affording relief by the operation of bronchotomy. I have seen the lungs inflamed in various degrees, and almost always considerable portions are in a state of engorgement, owing perhaps to the mechanical impediment to respiration.

In M. Bretonneau's numerous dissections, false membrane was found extending from the tonsils down the air-passages, and sometimes even into the œsophagus.

Pathological Remarks.—Since the publication of Dr Cheyne's beautiful illustrations of croup, no doubt has existed that the

false membrane is the product of severe inflammatory action of the mucous surface.

A great deal too much has been attributed to spasm in this disease. Cullen, for instance, assigns more danger to spasmodic action, than to the exudation of lymph. In the 327th paragraph, he says, "*The peculiar and troublesome circumstance of the disease, seems to consist in a spasm of the muscles of the glottis, which, by inducing a suffocation, prevents the common consequences of inflammation;*" and again, in the 329th, "*When the disease ends fatally, it is by a suffocation, seemingly, as we have said, depending upon a spasm affecting the glottis; but sometimes, probably, depending upon a quantity of matter filling the bronchiæ.*" At the same time, he attributed the febrile symptoms to a corresponding spasm on the surface; in fact, he was fond of riding his spasmodic hobby, and being unacquainted with pathological investigations, his great mind was frequently turned out of the proper path of inquiry.

Spasm may certainly exist in this disease; but there is sufficient to account for the symptoms without having recourse to spasm as a cause. We have at first slight difficulty of breathing, from the increased vascularity and distention of the vessels of the mucous membrane producing swelling, and consequently some diminution in the calibre of the air-tube; subsequently, from a greater or less degree of congestion of the lungs; and lastly, from the exudation. Death is sometimes produced by asphyxia early in the disease, by congestion of the lungs, and by the inflammation being peculiarly severe at the rima of the glottis, occasioning such a degree of swelling as to prevent inspiration; and children often die during the act of crowing.

*Treatment.**—This is a disease of all others which requires promptness of decision, and activity in practice; for if the false membrane be allowed to form, not above one case in a hundred can be saved. The worst cases are those in which a sore throat has been neglected, and the inflammation has spread into the wind-pipe; or those in which patients have la-

* The same observations are equally applicable to inflammation of the larynx.

boured under bronchitic symptoms for a week, or perhaps more, before the disease has affected the trachea and larynx, in which circumstances, a recovery is rather to be considered as an escape, than as an event to be expected. Very opposite opinions exist respecting the treatment; some trust, perhaps too much, to bleeding and blistering, to the neglect of other means; and there are others who assert that bleeding is injurious. I shall first state the practice which I have found to be successful, and afterwards that which has been recommended by others.

If consulted early, there can be no doubt of the propriety, nay, the necessity of drawing blood; if by opening a vein, so much the better, because we can thereby make an instantaneous impression upon the disease, and upon the system, by diminishing the quantity of blood, altering the determination, and unloading the lungs. However young the child, if above eighteen months or two years old, I would recommend this practice from experience; but only when the child has been previously healthy, and we are satisfied that there is no considerable effusion into the ramifications of the bronchi, and that the false membrane is not already formed in the trachea; otherwise, death will frequently be the consequence. This happened in the case related in the 18th observation of Bretonneau's work; the patient was bled on the sixth day of a severe disease, and died the same night. Among other appearances found in the dissection of this case, the following are described at page 160.—"The false membrane lined the larynx, the trachea, and extended deep into the air-passages, even to the fourth subdivision of the bronchi of the right side, and the last ramifications on the left."

Leeches are to be applied in numbers corresponding to the age, strength of constitution of the patient, and period of the disease; and should be placed along the course of the windpipe, or top of the sternum; they should be repeated according to circumstances. But it can be of no use to draw blood even in this manner, if a sufficient number of leeches be not used, and re-applied at sufficiently short intervals, or if not employed till the false membrane be already formed. In the case which forms Bretonneau's 17th observation, detailed at

page 155. it will be found that a child of twenty-seven months old, was seized on the 4th December with a slight cold, and altered tone of voice. During the 5th and 6th, it became worse, and on the 7th, we are told that *three leeches* were applied to the neck, and a little ipecacuan was prescribed, which was continued on the 8th and 9th without the leeches; the child died on the 12th. It is no wonder, then, that this author should condemn depletion, this being the way in which it was employed.

If general blood-letting be used, one operation ought to be sufficient, and we must subsequently trust to the application of leeches.

Emetics are to be administered, more especially at the beginning of the disease, and when it is complicated with bronchitic effusion. In the commencement, the best emetics are the antimonial, prepared by dissolving two grains of the tartrate of antimony in two ounces of water, a tea spoonful of which is to be given every five or ten minutes, till the full effect be produced. In many cases it is difficult to produce vomiting, but by giving the antimony, we ensure its contra-stimulant effects, whether vomiting be produced or not. Brisk purgatives are also necessary, until the bowels are freely opened. During the whole course of the disease, the warm bath used occasionally will be found serviceable. The effect of blisters is often very decisive in the first stage, after bleeding and leeching have diminished the violence of the disease; but it is needless to torture children after the false membrane is formed. Children can rarely be made to inhale hot vapour; if they can, it will be found very serviceable.

We are informed by Dr Mason Good, that two physicians of St Petersburgh, Drs Harden and Miller, had ventured upon cold effusion *after every other remedy had failed*, and the practice was attended with success; but no one who understands the pathology of this disease, and has seen the appearances on dissection, will believe that the false membrane could be removed by such means.

I have a very high opinion of the action of calomel in this disease, if employed early, and not trusted to entirely, to the neglect of general and local bleeding. The more rapidly the

system is affected the better; and it should be given in doses of two, three, and four grains, so that from two to three scruples are taken during the first twenty-four hours. If the calomel produce hypercatharsis, it is to be discontinued, and mercurial ointment rubbed-in on various parts of the body. The mercurial treatment should not, however, be too long persisted in; if it have any effect, it should be seen within the first thirty or thirty-six hours. It is impossible to say in what manner the calomel acts. Dr Mason Good says, "it not only acts by exciting a salutary revulsion or contra-action, but *breaks down the thicker parts of the blood, from which the membranous secretion is principally furnished!*" page 427. Dr James Hamilton jun. was once a mercurial champion of the highest order; he used calomel in very large quantities; but he has now changed his opinion, and considers it in the light of a poison, in almost every other disease but syphilis. Is there an individual in the British empire, with an ordinary share of common sense, who having cured forty-six out of fifty cases of such a dreadful disease as croup, by means of the action of calomel, which Dr Hamilton alleges he has done,* would not feel justified in recommending others to follow the same treatment? But this useful remedy has since been cast in the back-ground, and he has had the extreme folly to state, "*that the action of mercury tends, by exciting inflammation and effusion, to produce thickening of various membranes, particularly of the pleura.*"†

Bronchotomy has been frequently recommended in croup, and occasionally successfully practised. There are cases in which it ought to be performed, because there is a possible chance of success; and there are others in which such a step will only tend to bring surgery into disgrace. If the disease be confined to the larynx and upper part of the trachea, we ought not to hesitate when suffocation is threatened; but if the membrane extend into the bronchial tubes, or be complicated with extensive bronchitic inflammation and effusion into both lungs, it will be improper. It appears to me that bron-

* "On the Use and Abuse of Mercury," &c. page 206.

† Idem, page 219.

chotomy should be had recourse to in the three following circumstances only :—In inflammation of the larynx, threatening suffocation ;—when foreign bodies have accidentally found their way into the larynx ;—and in the peculiar affection of the epiglottis, larynx, and rima glottidis, which was first minutely described by Bayle.

When performing this operation in a case of croup, it should be always kept in view, that if the disease be far advanced, the false membrane has a tubular form ; in fact, it has taken the shape of the canal, from the surface of which it is very easily separated ; so that when the incision is made through the cartilages, the membrane may collapse from the pressure of the atmosphere, and produce instant death. Before quitting this subject, I may mention that Bretonneau, in the epidemic which he described, trusted at last entirely to the action of mercury, and the local application to the inflamed tonsils, of pure muriatic acid ; and he assures us that the practice was attended with great success. With regard to calomel, he says, at page 94, that its good effects were perceived in a few hours after the administration of the first doses. But after a careful perusal of the work, and the result of the practice, I see no reason to alter the opinions already expressed.

Chronic inflammation of the trachea requires the frequent application of leeches and blisters ; inhaling the vapour of warm water or tar, together with an occasional emetic ; the steady use of laxatives ; warm clothing, and farinaceous diet.

The disease described by Bayle, and to which several allusions have been made, is an œdematous affection of the larynx, glottis, and epiglottis. I conceive, however, that it is often owing to the swelling produced in the first stage of acute inflammation of the mucous membrane also, when it is swollen and dry ; and also to chronic inflammation, which is not attended by œdema. It is sometimes produced by sudden congestion of the vessels of the mucous membrane, which had previously been in a state of irritation, as I shall attempt to shew, when treating of the pathology of hooping-cough.

It appears to me, that this is the disease which sometimes goes by the name of " Spasmodic Croup." The same pathology likewise serves to account for the phenomena of the

affection which is commonly known by the appellation of "crowing disease."

It is probable, that this is the true pathology of the disease described long ago by Miller, and afterwards noticed by Parr and others, under the denomination of "spasmodic asthma of children."

It is supposed that croup is a disease consisting of a combination of inflammation and spasm; but, that spasmodic croup consists entirely of spasm. Occasionally, children die after giving a single crow, and I had once an opportunity of seeing a man 40 years of age die in a few hours from the first attack. Upon minute inquiry, it will be found, however, that individuals cut off in this sudden manner, have for some days or weeks laboured under what is called a common cold.

I am inclined to believe that this disease may be produced by cerebral irritation, causing a morbid action in the nerves that supply the muscles of the throat, and which, by producing a convulsive spasm, occasions the contraction of the larynx, so as to produce the following phenomena.

Symptoms of Spasmodic Croup.—Children are generally seized in the evening, or during night, with a sense of coldness over the whole surface, and laborious breathing. During inspiration, a long shrill sound is produced, alternately with coughing, and occasionally weeping, when the voice is observed to be hoarse and croaking. There is a sense of constriction in the throat, an expression of great anxiety in the countenance, with lividity of the cheeks and lips.

These phenomena are produced by the application of cold, and even by cold feet; they frequently occur during dentition. The bowels are almost always found to be in a neglected state. The disease is rarely fatal.

On dissection, the lungs will be found in general loaded with dark-coloured blood, so much so, as to have lost a great deal of their natural colour and buoyancy. At one time, I was disposed to regard this condition of the lungs as the disease, till a fatal case occurred, at the dissection of which I had the able assistance of Mr Syme, who displayed the state of the mucous membrane of the larynx in the most satisfactory

manner, and drew my attention to the memoir written by Bayle. The following is a history of the case.

Edward Currie, æt. 40, a labourer.—Up to the period of the great fires in Edinburgh, which took place in November 1824, he had always been a healthy, stout man. During his attendance in working the engines, and in carrying water, he was exposed to cold and wet, and was subsequently affected with what he called a severe cold and sore throat, attended by occasional headaches; but having a large family, and being of industrious habits, he continued to work at his daily labour. On the 2d of January following, he became worse, and was unable to go out, but sat at the fire-side almost the whole of the day, complaining of chillness, sore throat, and tightness about his chest. After passing a restless night, he sent to my dispensary for assistance on Monday. At 5 o'clock in the evening, he had severe rigors with difficulty of breathing, and at ½ past 6, was visited by one of my pupils, Mr Marshall, (now of the 87th Regiment,) whose name is associated with many other interesting cases, and from whom I received the following report:—"On seeing him, I believed he had caught a cold; he complained of sore throat, and evinced some uneasiness in swallowing, but there was no appearance of inflammation of the fauces, nor pain on pressing the wind-pipe. The rigors were still severe, the pulse strong, beating about 70 in the minute, and there was a sense of constriction in the chest. He was bled to the amount of 18 oz. during which the rigors ceased, but afterwards returned."

Mr Marshall thought his patient in no danger, and that the symptoms would soon give way to the remedies prescribed; but in about an hour after he took his leave, the dyspnœa became much worse, attended with severe rigors. Mr Davidson, a respectable surgeon in the neighbourhood, was immediately sent for, who found the man in such a dangerous state, that he wished me to be present before any further step was taken; but soon the symptoms became so much more urgent that he could wait no longer, and he opened a vein in the arm; the blood was flowing on my arrival. About 18 oz. were abstracted with very little or no relief: although a large orifice was made, the blood did not flow in a stream, and it

was very dark-coloured and thick. It coagulated very imperfectly, yielded no serum, and had every appearance of what is commonly called "dissolved putrid blood." The state of the respiration sometimes resembled that which is heard in croup, after the formation of the false membrane; at others, that of hooping-cough, during the paroxysm; indeed, the similarity was so great, that I heard a number of women discussing the point. It was ascertained that he experienced the greatest difficulty in breathing during the act of *inspiration*, when he made the shrill crowing noise. There was cough. He spoke distinctly after the bleeding, which he could not do before, but it was in a low voice, and the exercise seemed to cost him a considerable effort; he said, "I feel rather better." His face was pale and anxious, and I was told that it had been so for several hours; pulse rapid and feeble. Upon being subsequently asked if he had any pain, and where it was situated, he replied by placing his hand upon the thorax, and nodding. During the momentary absence of Mr Davidson and myself in an adjoining apartment, the patient felt a desire to make water, and actually got out of bed unassisted, and lifted the chamber-pot. Upon our return, he was cautioned to lie down, and on no account to make such an exertion again; but he persisted, declaring he felt somewhat better, and in a moment afterwards he was dead.

The body was opened 36 hours after death. The following were the appearances observed. Right lung attached throughout its whole extent, by old adhesions to the pleura costalis, left lung free. The lungs and trachea were then carefully dissected out, including the root of the tongue, and minutely examined. The lungs were of a very dark colour, heavy, and gorged everywhere with dark-coloured blood; although there was no hepatization, yet two-thirds of these organs, when cut in small pieces, sank in water, a little below the surface; this was proved not to depend on alteration of structure, for by washing they were restored to their natural colour and buoyancy. The mucous membrane everywhere in the larynx, trachea, and bronchial tubes, was of a dark red colour, and coated with reddish mucus; but the bronchial tubes were not gorged with it, as seen in the lungs of those

who die of bronchitis; the larynx was found so much ossified, that after being slit open, it could not be separated to any extent; the mucous membrane at this part was found so much swollen, as to leave the smallest possible passage for the transmission of air at the superior, but particularly the inferior aperture; the epiglottis was much swollen, erect, stiff, and of a red colour.

Treatment of Spasmodic Croup.—This affection in children frequently terminates after copious perspiration, so that nurses have been led to put them as soon as possible into a hot bath, which is in general efficacious, and it is the first thing to be done. An emetic ought also to be given, and if these means fail, a vein should be opened, and a moderate quantity of blood abstracted, or leeches applied about the larynx. This is the case of all others for bronchotomy, and I confess, that it is probable the life of Currie might have been saved, if the operation had been had recourse to. M. Thuilier has recommended compression from time to time of the œdematous epiglottis, which cannot be easily effected; and if it could, little service would follow, as it is the condition of the membrane at the rima of the glottis, which occasions the danger. Bayle proposed the introduction of a sound into the trachea, failing which, bronchotomy. Lisfranc suggested that incisions should be made into the œdematous parts, to facilitate the discharge.

CROWING DISEASE.

The *Crowing Disease* usually commences with teething. The infant is observed to make a shrill sound during inspiration, when there is an unusual paleness of the face, or flushing. It occasionally appears terrified, clings to the nurse, and the eyes are suffused with tears. There may be one such attack during the day, or the infant may be constantly affected. After cutting a pair of teeth, there may be no appearance of the affection till the next set occasions irritation of the gums. The crowing disease is sometimes connected with inflammation of the mucous membrane of the air-passages, with cynanche tonsillaris, and with febrile complaints;—these are dangerous complications. At other times, we can

distinctly trace cerebral disorder. This is likewise a dangerous complication, and there is no doubt that it is aggravated by disorder of the stomach and bowels. Experience has convinced me, that for the most part, the children affected in this manner have large heads, and are plethoric.

Treatment.—If there be plethora and febrile action, leeches should be applied to the throat, in such numbers, and repeated, as the urgency of the case may require. The bowels should be freely acted upon by any laxative, but it is sometimes necessary, from the morbid appearance and odour of the evacuations, to have recourse to a mercurial preparation. The gums should, if necessary, be freely divided, and the warm bath used morning and evening.

It is of importance to attend to the diet, to reduce plethora, and never to load the stomach. A solution of antimony should be used occasionally, either as a contra-stimulant, an emetic, or diaphoretic, in doses corresponding to the object we may have in view. The infant should be well clothed, and never taken out of doors in a cold or damp day. When the head feels hot, or when there are marks of cerebral disorder, the head may be shaved and kept cool; the bowels are to be more freely acted upon; frequent doses of calomel may be prescribed for a few days, and croton oil or antimony ointment applied to the head, to produce irritation and pimples on the surface of the scalp. This last-mentioned part of the treatment is very important, and must be persevered in, producing crops of pustules occasionally, for a considerable period of time. Change of air is said to have worked wonders in this complaint. I have seen it beneficial when the child was removed from a cold bleak situation to a milder and more sheltered spot; but I have more frequently observed change of air hurtful.

HOOPING-COUGH.

This disease is also known by the appellations chin-cough, kink-cough, &c. and it is probable that it is not a disease of such recent origin as has hitherto been imagined. Gardien very sensibly states, that if it has not been described in France

until the year 1414, it is because it has always been confounded with other species of cough. Indeed, some pretend that it was known to Hippocrates, while others assert that it was imported in more recent times from the East. It is not of much consequence how this matter really stands, because the most perfect knowledge as to its true origin, would not enable us to treat the disease more successfully. Hooping-cough is a disease of childhood, although I have seen many instances in adult age. Heberden says that he has seen it in a woman of threescore and ten, and in a man eighty years of age. It may be said to occur once only in a life-time, but several cases have fallen under my notice of secondary attacks. Dr Rosenstein states, in his work on the diseases of children, &c. that in Sweden, in the course of sixteen years from 1749, forty-three thousand three hundred and ninety-three children died of the hooping-cough, which gives an average of 2712 per annum; but in the year 1755, five thousand eight hundred and thirty-two children died of this distemper. In general, the annual mortality amounted to from seventeen hundred to two thousand in that kingdom. According to Dr Watt, the deaths from hooping-cough in Glasgow, have been pretty nearly $5\frac{1}{2}$ per cent. of the whole deaths in that city: the greatest number in any one year took place in 1809, when they amounted to $11\frac{1}{4}$ per cent.; and he concludes, that next to the small-pox formerly, and measles now, chin-cough is the most fatal disease to which children are liable. He gives a table, which appears to prove, that in young children there is more danger than in those further advanced in life; which does not altogether accord with my experience.*

Phenomena.—In the first stage of hooping-cough, the disease is almost always confounded with a common slight catarrh: the duration of this stage varies very much; in general, however, it extends from ten to twenty days. There is a dry cough, occasional sense of constriction in the chest, and a

* It affords me great pleasure to refer the reader to Dr Watt's work on Hooping-cough, as the best which has ever been published; and to that of the late Dr Marcus of Bamberg, who died the day after he sent his preface to the press.

feeling of weight in the head. The eyes are sometimes a little swollen and red, with frequent sneezing, and involuntary tears; in many cases, there is little or no fever except during the night: the bowels are generally out of order. We sometimes suspect the disease to be hooping-cough, because it is epidemic at the time, or in consequence of the convulsive appearance of the paroxysms of coughing. At last, however, the cough assumes a peculiar character; when this takes place, the disease is said to be in the second stage. It is characterized by an inspiration which is long and sonorous, producing a peculiar shrill noise, which is termed, in common language, the hoop or kink, to which succeeds an expiration, which is broken by frequent fits of coughing. No one who has seen the disease, when fully formed, can mistake it. When the cough commences, in slight cases, the features become a little swollen, the face red, the eyes suffused with tears; the cough, which is frequently interrupted by a long inspiration, is hoarse; the paroxysm ceasing with an expectoration more or less copious, frequently assisted by the act of vomiting, which discharges the contents of the stomach. As soon as this is accomplished, children are commonly able to return to their usual amusements, and appear to suffer little or nothing, until towards the period of the next paroxysm. The appetite is in general good. The expectoration is at first slight, scanty, and viscid; but if the disease go on in a favourable manner, the discharge becomes more copious, and less tenacious. Young children scarcely ever spit out the expectoration, unless during the act of vomiting; it is generally swallowed as soon as discharged from the air-passages.

The patient is in general warned of the approach of the paroxysm, by a greater or less degree of chilliness on the surface, and a tickling in the throat, immediately succeeded by a sense of tightness both in the larynx and chest, and a dread of suffocation, which induces him to fly to his nurse, or to lay hold of any thing within reach, for support during the fit. Others seem to derive relief from lying all-fours on the ground, and when the discharge has taken place, they jump up and run about.

In more severe cases, the sense of suffocation is dreadful; the respiration is much more impeded; the cough more intense and protracted; the features more swollen, and of a livid colour; the eyes seem ready to start out of their sockets; the eyelids are much swollen, and the cheeks perhaps bathed in tears; till at last expectoration takes place, when the children pant for breath, and are unable to return to their play for a considerable time. The skin is above the natural temperature, particularly at night; complaint is made of headache; the appetite is bad, the bowels are much disordered, the tongue loaded, and flatulent distention aggravates the patient's sufferings.

The straining which takes place during the paroxysm is sometimes so severe, as to produce the involuntary discharge of feces and urine. It is no uncommon thing for a small blood-vessel to give way in the conjunctiva, producing ecchymosis; hæmoptysis occasionally occurs, but this is rare in comparison to epistaxis, which is very frequent, and, when it takes place in plethoric children, is considered a very fortunate occurrence.

In the worst forms of the disease, fever is constantly present, and the breathing is always more or less impeded, which shews that some mischief is going on internally. Fits of temporary asphyxia are frequent, they are very often mistaken for convulsions, and by them children are sometimes instantly cut off. Indeed, children have been known to die suddenly during a paroxysm, asphyxiated, whose cases were previously slight, and not attended with fever. In some instances, convulsions occur, and carry off the patient.

Many of the severe cases met with in practice, are those in which this disease is engrafted, as it were, on bronchitis; or succeeds to small-pox or measles.

Causes.—Hooping-cough is rarely sporadic; it generally prevails as an epidemic. Some assert that it is unquestionably contagious, while others allege that it is not so. Some suppose that it is a disease produced by a miasm of a specific nature. Any discussion on these points is quite unnecessary.

Appearances on Dissection.—I have had fifty opportunities

of examining the bodies of those who died of this disease.* In one severe epidemic, we had upwards of two hundred cases at the dispensary, out of which there were thirty-two deaths. The appearances found on dissection were very uniform, according to the period of the disease at which death took place. I have seen two dissections of children who died asphyxiated, during the paroxysm, and in these the lungs were found to be gorged with blood; the whole lung, when put into water, shewing far less buoyancy than natural, and large portions, when separated, were found to sink to the bottom of the vessel. But it was proved that this increase of gravity was not owing to alteration in the texture of the organ, which resumed the natural colour, appearance, and buoyancy, when deprived of the blood by washing. The right side of the heart, and the large vessels near it, were distended with dark blood. The mucous membrane of the air-passages every where presented a dark red appearance, seemingly thickened, the tubes containing more or less mucus tinged with blood. The brain was not examined.

In ordinary cases, when death takes place during the second, third, or fourth week, the following is a sketch of the appearances. In the head, marks of vascularity and of venous turgescence, and sometimes also effusion of serum between the membranes, and in the ventricles; but these were far from being invariable appearances. In some few cases, there was great vascularity, and some effusion at the base of the brain, more particularly at the origin of the nerves, but not to a greater extent than has been frequently remarked in bronchitis, and other diseases in which there was no tendency to spasmodic cough, or to spasm of any kind. In one case, which was accompanied by violent and intractable convulsions, with considerable rigidity of the superior extremities, the substance

* It may be mentioned as a remarkable fact, evincing the improved state of society, and the advantages of education, in removing prejudices and destroying superstition, that in Edinburgh we are rarely prevented from examining a body after death, if sufficient attention have been paid by a medical man during the course of the illness,—except by the poor Irish population, who seem to have a more superstitious regard for their dead on this side of the channel than in their own country.

of the brain had a rosy tint; on making sections, large drops of blood quickly exuded from numerous points on the cut surfaces. On exposing the lateral ventricles, the left *corpus striatum* and *thalamus* were observed to be enlarged, particularly the former; in so much, that on measuring the depth of the brain on each side, it was discovered to be nearly half an inch deeper on the diseased side than the other; when cut, it was found to be rather harder than the corresponding parts on the opposite side. The child had previously enjoyed a good state of health, and even after death did not appear much emaciated.

Traces of disease were invariably found in the thorax. On some rare occasions, the lungs were somewhat collapsed; but in general they completely filled their respective cavities. In a few instances, the pleura costalis was covered with lymph like an unctuous secretion. Once or twice the lungs adhered to the walls of the chest, by an intermediate deposition of soft coagulating lymph. The anterior surface of the lungs, in almost all cases, presented spots of a whitish appearance, as if coated over with lymph; but this was found, upon closer examination, to depend on emphysema, air being effused beneath the pleura, from the rupture or enlargement of the air-cells; considerable portions were observed gorged with blood. Sometimes the substance of the lungs was in a state of œdema; and occasionally portions were observed inflamed.

In persons who were not cut off till the eighth or tenth week, tubercles in various states were frequently observed; sometimes vesicular or crude, large and solitary, sometimes softened, and partly discharged by expectoration. On one or two occasions, I have seen one lung infiltrated with a soft caseous matter. The bronchial glands are found enlarged, if the patient do not die before the third or fourth week.

The mucous membrane throughout the air-passages, has always displayed more or less vascularity, which increased towards the ramifications, and the tubes were found filled with matter which had more or less resemblance to pus. In the trachea and larynx, this secretion is observed, but I have never seen them filled with it, like the bronchial tubes. Sometimes flakes of coagulable lymph are observed, and ulcerations about

the glottis, in the larynx and trachea, but more particularly at the great bifurcation.

In the abdomen, sometimes every structure appears to be in a healthy state; at others, the liver is found gorged with blood, sometimes whiter, at others redder than natural. The mucous membrane of the stomach and bowels, has shewn various red patches, and I have seen ulcerations in the colon, and enlargement of the mesenteric glands.

The late Mr Alcock, a scientific general practitioner in London, in one of the numbers of the Medical Intelligencer, states, that he "has repeatedly ascertained by dissections of patients who have died of hooping-cough, that the larynx invariably exhibited signs of inflammation, often to so great an extent, as by its swelling to close mechanically the glottis; often the exudation of coagulable lymph near the larynx, the mucous membrane of the trachea and bronchiæ much increased in vascularity, and the cavities of the latter filled with fluid, more or less mixed with air, the appearance of the fluid varying from thin mucus to perfectly formed pus." This extract was presented to me by a friend one day after my lecture upon this subject, and I have never been able to procure the number of the periodical which contains the whole of the paper. I have thought it right, however, to give the extract, and to express the high respect I entertain for Mr Alcock, from the accounts which have reached me at different times, of his zeal and indefatigable exertions for the improvement of pathology.

These *post-mortem* appearances correspond with the dissections recorded in Dr Watt's Treatise.

Pathology.—Until lately, the most uncertain opinions prevailed respecting the nature and seat of this disease. Some supposed it to be a nervous affection, and of a true spasmodic character. Chambon and others assert that it is a true catarrh of the stomach. Some represent it to be a pure inflammation of the mucous membrane of the larynx, trachea, and bronchial tubes, to their termination in the air-cells. While there are others, like Gardien, who think that the disease is partly situated in the lungs, but that the essence of it consists of a spasmodic affection of the glottis and diaphragm. In consulting the works of Willis, published in the year 1670, it will be

seen that nothing was then known of the nature and seat of hooping-cough, and from the general want of success in treating it, this branch of practice fell into the hands of old women and quacks. According to the Brunonians, it is a disease of true debility. Some, indeed, conjoin it with typhus; while others allege, that it depends on inflammatory action in the brain. Rosenstein places the seat of hooping-cough in the nerves of the chest, and Hufeland agrees with him in that opinion. Autenreith declares, he found the pneumo-gastric nerves inflamed. Breschet seems to support this opinion, but although this state of parts may have occurred on some occasions, it is denied as a more common cause by other authorities. Guersent has stated, that he opened a number of bodies with a view to determine the fact, but he did not find the pneumo-gastric nerves diseased. No pathological information can be derived from Cullen's works, or even from Dr Thomson's recent edition of them, respecting this, or any other disease; but according to his absurd nosological arrangement, it is evident he thought it to be of a nervous and spasmodic nature. Dr Gregory, it would appear, gave up the investigation of the nature and seat of the disease in despair, for he used to make the following statement in his lectures:—"I do not attempt the proximate cause, though I may mention I have no faith in the theory that was advanced some years ago, that the disease depended on the stomach; it is more probable that it is seated in the lungs." Yet he considered it to be of a spasmodic nature.

The oldest opinion which can be traced, approaching to the true pathology of this interesting disease, is that which was advanced by the celebrated French writer Astruc, who states, (at page 142. of his Treatise on all the Diseases of Children,) that "*this disease principally consists in inflammation of the superior part of the larynx and pharynx, and more particularly of the latter, which is sometimes ulcerated with the constriction of the glottis, as dissection proves.*"

It appears to me, that investigators have been bewildered in endeavouring to discover the first link in the chain of diseased action, and by the character of the cough, with regard to which, it should be recollected, that a very slight degree of

irritation in the larynx, and even about the glottis, will produce most violent convulsive fits of coughing. Dr Watt says, that the cough is exactly what may be produced by any very violent irritation applied to the same parts, "of which, (says he,) I had a very striking proof some time ago. Two children had differed about their play; the one, who supposed himself ill used, to be revenged on the other, took a handful of saw-dust, and endeavoured to thrust it into his mouth. He succeeded in his attempt. The other, crying and struggling for relief, allowed a quantity of dust to be drawn into the wind-pipe. This gave great uneasiness, and after a short time excited violent convulsive fits of coughing, which exactly resembled those of the chin-cough. Even the hoop was very distinctly formed. At first he spat up nothing, afterwards thick mucus; at last, the irritating cause being removed by the expectoration, the other symptoms disappeared. This was a very striking example of chin-cough being brought on artificially." I have sometimes seen the same effects in both old and young, from articles of food, and particularly small portions of sweet-meats, going the wrong way, as it is termed, *i. e.* dropping into the larynx, or adhering somewhere about the margins of the glottis or epiglottis. I was once present at the dissection of a shoemaker, who died from extensive inflammation of the throat and wind-pipe, and who had during the whole of his illness, of four days standing, violent convulsive fits of coughing, with a complete hoop. On examining the throat and air-passages, extensive inflammation was discovered, and a small piece of a hog's bristle was found sticking in the margin of the glottis.

My opinion of the nature and seat of hooping-cough is as follows:—There is something peculiar in the disease, since almost no individual escapes contracting it once in his life-time. I have no doubt that the nervous system is involved in the affection,—very seriously involved; but in the present state of our ignorance of the structure and functions of that system, the doctrine of spasm must be very cautiously received into the medical evidence of the case, more particularly as all the phenomena can be satisfactorily explained without its aid. The essence of the disease consists in irritation and inflamma-

tion of the mucous membranes of the body, but more particularly of the air-passages. This is proved by the pectoral or catarrhal symptoms, which are to be observed from the very first onset of the disease; by the increased secretion; and by the result of dissections. Some say the disease cannot be a consequence of inflammation, because there is no febrile excitement in the pulse in slight cases, and no increased heat of surface; but it is a fatal error to suppose that inflammation cannot exist without fever. In the majority of cases of hooping-cough, the inflammation, although extensive, is only *slightly sub-acute*, and there is consequently no heat of skin,—no increased velocity of the pulse,—no thirst; but when the inflammation runs a little higher, then we generally have these constitutional symptoms. It will be observed on perusing the description of this disease given by every author, that it begins with the common symptoms of catarrh, from which it cannot, during the first stage, be distinguished.

The disease, when formed, comes on in paroxysms. I shall not stop to inquire whether these paroxysms are occasioned by a peculiar affection of the nervous system or not. The paroxysm commences with a sense of coldness on the surface, marking an irregular determination of blood, that takes place towards the lungs, which perhaps never will be satisfactorily explained. These organs become gorged with blood, and the air is consequently prevented from obtaining a free passage through the ramifications of the bronchi and air-cells; some degree of dyspnœa is produced, with tightness in the chest, and a sense of suffocation. All the powers of the constitution are brought into play to remove this congestion, violent coughing is excited,—all the voluntary muscles are called into excessive action, and a universal muscular commotion is produced, which tends to force the blood on in its circulation,—a copious secretion takes place from the mucous membrane, probably throughout the whole extent of the air-passages; and the fit ceases when the mucus is discharged, which is sometimes promoted by the act of vomiting. Towards the close of the paroxysm, a determination of blood takes place to the skin, frequently producing copious perspiration, which is probably assisted, if not entirely produced, by

the violent muscular commotion into which the body is thrown. This is also perhaps another way by which the congestion of the lungs is removed.

It is generally believed that the hoop is produced by spasm. It is not my business to attempt to disprove this assertion; but I have already shewn that the hoop has been produced by extraneous bodies, which have found their way into the larynx, or have been lodged about the glottis. It has also been shewn, that in pure inflammation of the mucous membrane of the larynx, before and after the effusion of coagulable lymph, the same sound has been heard; and also when the calibre of the larynx at the *rima glottidis* has been diminished by mere swelling of the mucous membrane, as well as by effusion, forming the disease which Bayle has described under the name of *œdema glottidis*. In all these cases, there is the long sonorous or shrill inspiration. Cullen says, (in the 1404th paragraph,) that "the peculiar sound is produced by air rushing through the glottis with increased velocity." It is admitted that this is occasioned by the diminution of the canal through which the air has to pass, and the only question to decide is the *cause* of this diminution. Cullen and others assert that it is owing to the spasmodic contraction of the muscles of the throat, which are connected with the larynx; while I presume, that it is generally owing to the other causes:—the fact is capable of explanation in both ways, but the decision will influence the treatment. In hooping-cough, we have decided evidence of congestion and inflammation of the air-passages; the larynx, the parts in the neighbourhood, principally suffer, and at the commencement of the paroxysm, when blood is accumulated in the lungs, the mucous membrane, I apprehend, becomes more swollen, and the space at the rima of the glottis is diminished, so as to be almost closed. It is admitted that the difficulty which the air experiences in traversing this part, produces the phenomenon of the hoop, and increases the tendency to asphyxia and convulsions. The distention of the vessels is probably relieved by increased secretion and determination of blood to the surface.

Sometimes the lungs are not properly relieved from a state of engorgement, which, if life be not immediately destroyed,

terminates in inflammation of the substance of the lungs, or the formation of tubercles.

The brain is frequently affected, not in all probability from any primary diseased action in that organ, as some have supposed, but from the obstructed circulation in the lungs, and the over-loaded state of the right side of the heart, preventing the free return of blood from the head. The brain, as well as every other part of the body, must likewise suffer from what may be termed the chemical condition of the blood itself, owing to the want of those natural changes which take place in the lungs, which are prevented partly by the congested state of these organs,—partly by the want of a sufficient supply of air during each paroxysm,—and partly by the diseased condition of the mucous membrane.

Treatment.—Dr Ferrier, in his Medical Histories and Reflections, (vol. iii. p. 215.) says, that "hooping-cough has been too much trusted to the management of nurses, and has been empirically treated, even by those physicians who have applied themselves to the particular consideration of the complaint." Dr Gregory, in his lectures upon this subject, with that frankness and candour which marked his career, used to make the following statement:—"I think it proper for me to warn you, in the first place, that we have no cure for it." Cullen divided this disease into two stages; the first continues perhaps for three weeks; during this period, he imagines the contagion to be present, and operating on the animal frame. The second stage embraces the whole remainder of the disease, should it last for twelve months. Dr Mason Good says, that he believes the hypothesis to be correct: "throughout the first stage, (says he,) our attention should be directed to whatever will moderate the influence of the contagious stimulus, retard the return of convulsive paroxysms, and mitigate their violence."

"Bleeding, (says Mason Good,) in severe cases, will be found necessary for this purpose; but it should be avoided, except in severe cases, as spasmodic affections are often rather increased than diminished by the use of the lancet; and it will in general be found better to employ blisters as a substitute." This paragraph contains almost the best proof I could

bring forward, that bleeding, even in the present age, is frequently recommended and practised upon unsound principles. If bleeding be employed, it is for the prevention or cure of inflammatory, and not spasmodic action; but it is only in *severe cases*, according to Mason Good, that bleeding is to be used, "*as spasmodic affections are often rather increased than diminished by the use of the lancet.*" Now, it appears to me, that if the lancet tend to increase a slight spasmodic complaint, it will surely aggravate a severe one in a still greater degree.

Bleeding is not necessary in a great majority of cases, nay, it might prove injurious in some, by interfering with the efforts of the constitution; but when the patient has fever, difficulty of breathing between the paroxysms, a near approach to asphyxia or convulsions during the paroxysm, or if he complain of a constant sense of stricture in his chest, or severe headache, I would recommend blood-letting, by opening a vein, if the patient be robust, about two years of age; and if the air-tubes are not filled with mucus, I have frequently seen the best effects from opening the jugular on such occasions. It is impossible to say what quantity should be taken; it ought to be sufficient to make an impression upon the disease, or upon the system. I once saw a boy six years old, labouring under hooping-cough, who was in great danger, from the congested state of his lungs and brain. I requested the gentleman who was in immediate attendance, to open a vein, and to allow the blood to flow till relief was obtained. At my next visit, I found that 15 ounces had been abstracted. He bore the bleeding well, and his condition was very much improved. Next day, however, violent enteritic symptoms took place, which were not subdued till after the application, in all, of twenty leeches. This boy made a remarkably rapid recovery. —It must not be understood that I would recommend the same quantity of blood to be taken from every child of that age: the case is mentioned to shew that a considerable quantity may be abstracted without necessarily producing any bad consequences, and its power in controlling the disease.

A similar practice must be pursued if the patient be lethargic, which, in such cases, marks oppression of the brain, and

frequently precedes convulsions. Sydenham speaks strongly in favour of V. S. in Hooping-cough, at page 321, (Swan's Edit.) The following statements will be found: "*By this practice of venesection, and repeated purges, and by this only, is conquered the convulsive or hooping cough; an obstinate disorder, which scarcely any other method will subdue.*"

We must depend upon leeches in young children; as well as in older patients, in advanced stages of the disease: The number of leeches to be regulated according to the circumstances noticed when treating of bronchitis.

To show the advantage of leeching even at the eleventh hour, I beg to refer the reader to the three cases mentioned at p. 3, Willan's Diseases of London.

It should be mentioned, that hooping-cough is a disease in which auscultation should be employed; by this means, we may determine whether inflammatory action be going on in the lungs,—whether it be general or partial,—and whether the bronchial tubes be loaded with matter: if they are loaded, we should be deterred from bleeding, for reasons so much insisted on when treating of bronchitis.

After I was convinced of the morbid state of the larynx and *rima glottidis* producing the hoop, or kink, as it is sometimes termed, it naturally occurred to me that leeches, applied over the part affected, would be attended with the best effects in cases where the paroxysms were severe, and threatening asphyxia. The theory may be wrong, but I can speak confidently of the success of the practice. I had an opportunity of trying it in twelve cases, in three of which the hoop never returned, although the children were previously threatened with asphyxia; all the others were relieved in the most striking manner; and had it been necessary, from the re-occurrence of urgent symptoms, to apply them again, or had a great number been put on at first, I feel persuaded the hoop would have been destroyed in the whole. The immediate relief of this symptom, which occurred in the case of a lady, when threatened with suffocation, I shall never forget. Five children in one family were under my care, with hooping-cough: two of them had considerable dyspnœa between the paroxysms, with a tendency to asphyxia during each attack, and were exceed-

ingly ill; blood was taken from the jugulars with extraordinary relief; a third had leeches frequently applied. These three recovered speedily. The other two had the disease so favourably at first, as not to require any treatment, except keeping the bowels open, and an occasional emetic, yet they were the most troublesome cases out of the five, and were double the length of time indisposed.

A solution of the tartrate of antimony will be found useful, if the diseased action in the lungs shew any tendency to increase. In such circumstances tincture of digitalis is often of great service, in considerable doses. It is often beneficial to employ antimony and digitalis alternately. Emetics have been much over-rated in hooping-cough. One or two may be of use when the disease is forming; and they may be exhibited now and then, in the latter stages, when the expectoration is not easy, and when we know, by auscultation, that the bronchial tubes are over-loaded with mucus. I have found an antimonial emetic the best, when there is any febrile disturbance; but should the emetic be wanted merely to unload the tubes, and particularly if the patient be weak, perhaps the sulphate of zinc will be found preferable, as it commonly leaves no sickness or depression.

Gentle purgatives are to be used for the purpose of keeping the bowels easy; great mischief is often done by the constant exhibition of drastic medicines, for weeks together. Many practitioners seem to forget, that the long continuance of powerful medicines, will certainly produce great disorder of the bowels, and consequently foul evacuations.

The antiphlogistic regimen, and confinement to one apartment, during the first part of the disease at least, are essential circumstances in the treatment. An occasional opiate, and a warm bath, will be found of service as auxiliary remedies.

Blisters are necessary in very acute cases; but except in such instances, the contra-irritation produced by the tartar-emetic ointment, will be found most efficacious. This plan was first recommended by Autenreith.

It has frequently occurred to me to observe, during epidemics of hooping-cough, that those affected were sometimes attacked with measles, scarlatina, and even small-pox, the cases

being much aggravated during the eruptive fever; but subsequently upon the appearance of the eruption, the phenomenon of the hoop, which gives the character to hooping-cough, became very much moderated,—in two or three cases it entirely ceased, but it generally returned when the eruption declined; an instance of which is related in Dr Ferrier's excellent work already quoted: "Miss ——, aged one year and a half, had the hooping-cough in a slight degree for some weeks. When it seemed to be leaving her, she was seized with the measles, and there was an appearance of a very large crop of the eruption. Her cough was not very troublesome, and no longer resembled the hooping-cough. On the third day she was seized with an extreme degree of dyspnœa, and a short harassing cough, and the eruption almost entirely disappeared. The pulse became innumerable. Leeches were applied to the extremities, blisters were applied to different parts of the body, and every method was used to renew the eruption, but without success. The cough increased, but the dyspnœa began to relax, and at length, to my great satisfaction, the type of the hooping-cough was renewed, and my patient recovered, by time, and change of air. Not one spot of the eruption of measles, ran its usual course." Dr Watt notices the same fact, and it now appears strange that so obvious a circumstance had been overlooked, as it is evident that the irritation was removed from the wind-pipe by the cutaneous eruption.

The application of the ointment occasions an artificial eruption, exceedingly like small-pox. Autenreith considered it a certain specific, when a copious crop was produced on the epigastric region; and he distinctly assures us, that the use of the ointment for twelve days produces a cure;* but the result of my practice does not authorise me to make the same statement, therefore I am persuaded Autenreith could not have met with such severe cases as I have occasionally happened to treat, particularly in the epidemic which existed in Edinburgh about four years ago. His theory of its action, however, perfectly coincides with mine, that "when the irritation is well

* I have reason to believe that Autenreith has changed his opinion, upon more enlarged experience of the remedy.

established, it acted by directing the blood to the surface from the air-passages." It may be shortly stated, that I have seen it very serviceable in this disease, so much so, that I always have recourse to it; and it is a far more beneficial method of producing irritation in sub-acute and chronic inflammations, than that by blisters, because it is more permanent. The proportion of tartar-emetic in the ointment, is a drachm to the ounce. The antimony may also be applied, by sprinkling it on the surface of a pitch or warm plaster.

Several curious circumstances have attracted my notice, with reference to the external application of this remedy. In five or six cases, when it has been rubbed over the epigastric region, violent vomiting has been produced, which was proved to be owing to the antimony, by leaving off the ointment, and returning to it several times. When applied to the chest, the eruption sometimes appears on the genitals and groins; when this was first observed, I thought it had been produced by negligence, but I have since seen the same circumstance, in cases where every care was taken to prevent any accidental application to these parts.

When the internal disease is severe, it is in general difficult to establish the cutaneous irritation by the application of the ointment. I have remarked in three cases, when indiscriminately applied over both sides of the thorax, that the eruption did not appear on that side in which the diseased action was most violent, while there was a copious crop on the other; and in one of the cases, the line of demarcation was exactly in the mesial plane.

Dr Cullen, from the hypothetical notion that the disease continued during the second stage, merely by the power of habit, recommended antispasmodics or tonics; he therefore advised opiates and Peruvian bark. Dr Hufeland likewise recommended belladonna, considering the disease to be of a true spasmodic nature; he gave it in doses of a quarter of a grain morning and evening, to children between three and six years of age. Ext. Conii was formerly in great repute. As tonics, small doses of zinc, arsenic, and nitrate of silver have been employed. In Russia, the berries of the spurge laurel are said to be specific; they are employed, it would appear,

as stimulants and antispasmodics. The sulphate of alumen has been highly extolled. But it would be no slight task to give a list of the remedies which have been strongly recommended. There is a popular feeling in favour of garlic, applied externally in the form of ointment or tincture, and the internal use of a solution of cochineal. Camphor is supposed by the vulgar to be an antidote.

During recovery, it is of the greatest consequence to attend to the clothing, diet, and exercise of the patient; I have frequently traced relapses to cold feet, and to indigestible food. Laxatives are necessary, and the cold bath is in great estimation with some practitioners; of which last, I cannot give an opinion: but I have seen the greatest advantages in this disease, and many other cases of chronic bronchial affections, from sponging the body with water, or vinegar and water, two or three times a-day. Change of air is extolled by some individuals, but is often productive of great mischief, by occasioning a return of the disease. It is an important fact, that during a late epidemic, which was the most severe I have ever witnessed, all the children that were moved for change of air had the disease the longest. The children of two families, who had it in the very slightest form, were taken to the country when nearly cured; most of them had relapses, not only upon going away, but also on returning. The cause of relapse, in such cases, is easily explained; the patient may be moved from a warm situation to a damp, cold one; or he may be put into a damp bed; or a change of weather may take place when on his journey. It is a common practice to send hooping-cough children to tan-yards for a considerable part of the day; but really the pathological notions upon which this practice is founded, are too contemptible and vulgar to require refutation!!

CHAP. III.

PNEUMONIA.

This disease has received various denominations, as Peripneumonia, and Pneumonitis; the term Pleura-peripneumonia, is employed to express the co-existence of inflammation of the pleura and lungs.

Phenomena.—Like other acute diseases, pneumonia commences with shivering, followed by a hot stage, which is in general pretty violent, unless in congestive inflammation, when coldness predominates. There is more or less dyspnœa, and the number of respirations considerably exceed twenty in a minute, which may be taken as about the natural standard. The breathing is in some cases very laborious, but we must be careful, as Andral properly remarks, not to allow ourselves to be led astray by the account which patients give respecting this point, for often, when the respiration is short and hurried, they will assure us that they do not feel the least impediment. Pain is not a well-marked symptom in inflammation of the substance of the lungs, the patient complains rather of a tightness in the thorax; and when pain exists, it is in general dull instead of sharp. The cough is short, perpetual, and does not come on by fits; it is dry at the commencement, and continues very distressing and obstinate. The expectoration is scanty, viscid, and discoloured, from an admixture of blood; sometimes it is bright, like red currant jelly, but in general, it is rusty-looking, resembling brick dust intimately

mixed with viscid mucus; it is so tenacious, as to adhere firmly to the sides of the vessel into which the patient spits. It is very important to attend to the colour of the expectoration, because it assists us in determining, not only the nature of the disease, but also its extent and severity. The expectoration is sometimes, though rarely, fetid. A gangrenous odour is perceived when the disease terminates in gangrene.

The pulse is variable in many respects, and practitioners should be very wary in depending upon it, in the confident manner so generally followed, and more particularly in pneumonia, which I have known to go on rapidly to a fatal termination, the pulse never exceeding the natural standard. Sometimes, when the inflammation is most intense, it is observed to be extremely small. Morgagni noticed the uncertainty of the pulse in pneumonia long ago. Many suppose that recovery is rare, when the pulse beats more than 130. Andral makes this remark, and I have no doubt, from the milk-and-water practice which is too frequently adopted by French practitioners in inflammations of important organs, that they may find it so. I often perceive the pulse to rise both in frequency and force after bleeding, when the disease is fast subsiding; in many irritable constitutions it increases in frequency in consequence of considerable depletion, even when the disease is declining.

With respect to the heat of skin, I have similar remarks to make; for although in many cases it may be hot and dry, yet in others it is below the natural standard.

The tongue soon, in the course of this disease, becomes parched and dark-coloured; a dry glossy tongue is always a bad symptom.

It has been too frequently stated in books and in lectures, that the face usually becomes livid and discoloured in pneumonia,—this is an error, being more a symptom of bronchitis, than of inflammation of the substance of the lungs.

Delirium occasionally takes place, but it is far from being a general symptom; when it occurs early, it denotes danger. Mental aberration often occurs, however, after acute diseases in the chest and abdomen have been subdued, particularly by

extensive bleeding. It in general soon yields to the use of opiates and stimulants prudently administered.

Much misconception exists respecting position in affections of the chest. It is pretty generally believed that patients prefer to lie on the affected side. This is very much the case in pleuritis, empyema, and in single bronchitis; but in pneumonia, patients are generally found on the back, particularly in severe cases.

In the very severe forms of pneumonia, in which a large portion of the lung is inflamed, together with extensive effusion into the air passages; or in cases complicated with considerable local congestions; or in those which terminate in gangrene of the lungs—the powers of life quickly give way, attended by symptoms which are generally denominated typhoid. In truth, this form of the disease has obtained the name of *pneumonia typhoides*. There is undoubtedly such a form of pneumonia, but I object to the adjunct "*typhoides*," as expressing erroneous ideas of the pathological condition of the body. This form of pneumonia was very prevalent during the war, among troops stationed in exposed situations along the coast, and in large garrisons where the night-duty was severe. The soldiers were often seized with the disease when exposed as sentinels;—instead of walking about, they frequently stand shivering in their sentry-boxes, the surface continues long chilled, and with a view to fortify themselves, and produce warmth, they are in the habit of drinking ardent spirits in considerable quantity. In the strongest subjects, I have seen the disease, in such circumstances, run its course to a fatal termination in from forty-eight to sixty hours.

Remissions of this complaint sometimes take place, and it is too much the custom at such times, either to omit the necessary remedies, or to be too solicitous about supporting the strength.

The only certain test of the presence of pneumonia, is that derived from auscultation; and in considering this part of the subject, the disease must be divided into stages. In the first stage, or that of invasion, the crepitous râle is heard distinctly; it resembles the noise which is produced by sprinkling finely powdered salt on the fire, or rubbing a lock of hair,

gently, between the finger and thumb near the ear. This râle exists also in œdema of the lungs, and pulmonary apoplexy, but these are distinguished from pneumonia by other symptoms. In this stage, the sound produced by percussion does not differ from that of health. When complete solidification has taken place, neither the crepitous râle nor the respiratory murmur is heard; but in the sound part of the lungs, the respiration will be perceived louder than natural;—this is called by Laennec "puerile respiration." Laennec says, that bronchophonism exists in certain cases, particularly if the inflammation be seated near the roots of the lungs, or in the upper lobes, in which places the bronchial tubes are the largest. In this second stage, percussion elicits a dull sound over the affected parts, unless the inflammation be confined to a small central space in the substance of the lungs. In the third stage, when the infiltration of pus-like matter begins to take place in the pulmonary tissue, the mucous râle is perceived to a greater or less degree, which Laennec supposes to be produced by the introduction of the fluid into the bronchial tubes;—when a large portion becomes softened, he calls it an abscess, and says that a very strong mucous or cavernous râle is perceived over its site, with pectoriloquism.

When resolution takes place before the disease has run into solidification, the crepitous râle becomes daily less perceptible, while the natural sound of respiration increases, and becomes gradually more distinct; at length it is heard without the least crepitous sound. But if solidification have taken place, the cure is invariably accompanied by the return of the crepitous râle, and then, as that declines, the respiratory murmur becomes more and more distinct.

I have thought it right not to be too minute in this description, by avoiding the varieties and combinations of these sounds, in the belief that they tend to puzzle the beginner. He may afterwards improve himself, and compare his observations with Laennec's statements; besides which, every professional man ought to possess Dr Forbes's translation, which contains so much excellent matter. But it is my duty to express my fears, that few will ever arrive at that degree of per-

fection which Laennec possessed in the detection of all the varieties which he has described. Since the above was written for the first edition, several British writers have distinguished themselves; but no one has gained more approbation than Dr Charles J. B. Williams, to whose excellent work I beg to refer my readers.

I have seen several cases within these few years, in which pneumonia existed in one lung, and severe bronchitis in the other; nay, they may exist in the same lung, which will of course mask the crepitous râle.

Inflammation attacks the right lung more frequently than the left; it rarely affects both lungs simultaneously; the inferior lobe is much more frequently the seat of inflammation than other parts of the lung.

Appearances on Dissection.—On examining the lungs, or any portion of them, in the first stage of inflammation, they will be found red, from the quantity of blood contained in the vessels of the part, and increased in weight. In the second stage, that of solidification, to which Andral applies the term "softening," and Laennec "hepatization," the diseased part will be readily broken down between the finger and thumb, which cannot be effected in the sound state, and the lung has lost entirely the crepitous feel; if put into water, it will sink at once to the bottom of the vessel. In the third stage, the lung is very heavy, and when cut into, is found to contain a great quantity of reddish or greyish fluid, which oozes out from every point.

The formation of an abscess in the lungs is a rare circumstance. I have seen one, or at most two instances of it. Laennec says he has seen it only five or six times. The granular appearance of an inflamed lung is best seen by tearing it: it seems to be agreed, by the best pathologists, that this is produced by the accretion of matter in the minute air-cells. The appearance of an abscess in the lungs, is sometimes occasioned by an effusion of lymph, which takes place on the pleura, between the lobes; adhesions form round the circumference of the effusion, and when a section of the organ is made, upon a superficial view it is hastily concluded to be an abscess.

A tubercular excavation is also frequently mistaken for an abscess: the history of the case, the appearance of the rest of the lung and that of the parietes, will put the inquirer right. The parietes of a cavern are solid, generally hard, lined with a false membrane, and there are probably portions of broken down tubercle. The large air-tubes contain a secretion, commonly of a grey or reddish colour.

In cases of pneumonia, when the substance of the lungs, near the surface, has been the seat of disease, numerous ecchymotic patches are observed, and the contiguous pleura almost always suffers. Hence we frequently see false membrane, effusions of various degrees of consistence, and adhesions, which, if recent, will be easily separated, but if ancient, will be found firm, and sometimes, when partial, much elongated.

It has been already mentioned, that inflammation of the substance of the lungs sometimes terminates in gangrene, but it is the least frequent termination. Cases are recorded, where the whole lung was found in this state; there are some in which one lobe only was affected, and in others it is still more partial. Dr Bright has given several cases, accompanied by plates of the gangrenous appearances, in his excellent "Report of Medical Cases."

When the lungs have suffered from chronic inflammation, they, in the language of Andral, will be found in a hardened state. When cut into, the knife gives a sensation as if it were dividing cartilage. In this hardened condition, the substance of the lungs sometimes looks grey, at others red; when it is of a grey colour, it frequently has the variegated appearance of Aberdeen granite.

It has not been yet determined in which tissue the disease commences. Some suppose it is in the cellular membrane; others in the air-cells themselves. I have not been able to satisfy my own mind on the subject, but my present impression is, that it is not invariably situated in the air-cells.

Treatment.—The lancet is to be used freely, and may be employed later, with less injury to the patient, than in bronchitis; but we must be guided very much by the stethoscopic signs, by which much blood and strength may occasionally be saved to the patient. I trust no arguments need be used to

prevent British practitioners from following the example of the French, who bleed frequently, but in small quantities at a time; indeed, Laennec states that he rarely repeats venesection, except in the cases of patients affected with diseases of the heart, or threatened with apoplexy, or some other internal congestion; and when he does bleed, he directs from eight to sixteen ounces to be taken from the arm, and he even boasts of curing pneumonia without blood-letting. (Page 250.)

Even on this side of the channel, bleeding is not always followed as it ought to be practised. Dr Mason Good, (at p. 436, vol. ii.) in treating of pneumonia, says, "In this case the bleeding should be prompt and copious, at least to eighteen or twenty ounces, and repeated twelve hours after if necessary." I object strongly to this recommendation, both as to the quantity of blood to be drawn, and the long interval between the bleedings; but the reader is referred to my observations on that subject at p. 271.

Late in the disease, bleeding must be used in small quantity, and with the greatest caution. The great use of auscultation in treating pneumonia, is, that in general, not only is the practitioner accurately informed with regard to the extent of the disease, but he is told if the sanative process have commenced; when bleeding is, to say the least of it, a doubtful remedy, and in many cases may do harm, by interfering with the powers of the constitution. Nevertheless I am persuaded, from experience in treating the disease, and from examinations after death, that much more mischief is done by bleeding too little, than by bleeding too much; but I am not an advocate for the heroic practice of taking seventy or eighty ounces of blood at one operation:—the largest bleeding I can boast of was fifty-six ounces. In general, if the operation be properly performed, thirty or thirty-five ounces will suffice, but the patient should be seen again in the course of two or three hours.

I have the history of a case before me, in which one hundred and ninety-two ounces were taken from one individual; but I am persuaded, that if he had lost two-thirds less it would have been better for him. Several months afterwards he was

weak and miserable, and it appeared very doubtful that he ever could regain his health. On one occasion, early in life, I very nearly lost a patient, from whom I had taken, at different times, in the course of four days, one hundred and twenty ounces of blood, but who recovered after the exhibition of stimulants. Within the last fifteen years, I have seen several cases where considerable injury had been inflicted by very large bleedings, the medical attendants having allowed themselves to be misdirected by the continuance of dyspnœa, which increased after each abstraction of blood. It was evident that this was owing to a want of sufficient blood in the system. In one instance, the patient was on the brink of the grave, with a pale sunk countenance, and cold extremities: the strongest stimulants were administered, along with large opiates. All these cases eventually recovered.

Antimony is of essential use in the treatment of pneumonia; but I would reverse the rule laid down by Laennec, and state that it is to be used as an auxiliary remedy only. Cullen, (in the 371st paragraph,) in alluding to antimony, says, that he has found it useful to exhibit nauseating doses, and in a somewhat advanced stage of the disease, that such doses proved the best means of promoting expectoration. The Italian physicians, and particularly Rasori, first exhibited the emetic tartar in very considerable quantity, as a cure for inflammatory diseases. Rasori, it would appear, gives twelve grains during the first day, and as much during the night; if the disease be already much advanced, he gives forty or sixty grains during the twenty-four hours, and goes on increasing the dose, till it amounts to several drachms. For much interesting information on this subject, the reader is referred to a long note by Dr Forbes, in his translation of Laennec, p. 263.

Laennec, who adopted the Italian practice in France, immediately after a small bleeding, gave one grain of tartar-emetic in three ounces and a half of fluid, which he repeated every second hour for six times. He then omitted the medicine for seven or eight hours, if the symptoms were not urgent; but if the oppression became great, with affection of the brain, or if both lungs or one whole lung were attacked, he continued

the medicine uninterruptedly, until an amendment took place, indicated by the stethoscopic signs. "Sometimes even, particularly when most of the above mentioned unfavourable symptoms are combined, I increase the dose (says he) of the tartar-emetic to a grain and a half, two grains, or even two grains and a half, without increasing the quantity of the vehicle. Many patients bear the medicine without being either vomited or purged." (Translation, p. 251.) Indeed, it is an extraordinary fact, that the more severe the disease, the less visible effect has antimony on the patient. This observation applies not only to pneumonia, but to bronchitis, in which very large doses do not produce nausea or vomiting, and which it is very difficult to bring about by any means. My experience in the use of antimony, and the result of the experiments which are published in the Lancet, (vol. ii. p. 536.) lead me to conclude, that vomiting is more speedily produced by a small dose dissolved in a large quantity of water, than by a large dose of the drug mixed with a little sugar; but in the latter case the nausea is more severe, and of longer continuance than in the former. Laennec states that its most constant effect is the rapid resolution of inflammation, and sometimes the equally speedy absorption of the inflammatory effusion. The latter effect is proved in the case of Pemberton, the subject of my second experiment, who was affected with "induration and enlargement of the testicle, which was of a scirrhous hardness." His first dose of the medicine was twelve grains, in half an ounce of water, taken upon an empty stomach: vomiting was not produced for fifty-five minutes. On the following day, the report states that the enlargement of the testicle was found to be diminished about one-third. In some days afterwards, he again took twelve grains in an ounce of the decoction of bark: vomiting did not take place till the expiration of an hour. Again he took, sometime after, twenty grains in a little sugar, and suffered much less pain and nausea from this quantity than during the preceding experiments. On the following day, the report states, that "the enlargement of the testicle continues to decrease:" in a short time it was found to be considerably reduced, and was soon quite cured. This man had been many months on the sick-list; the disease had

previously resisted all the usual remedies, and the question of extirpation was agitated.

I have no faith in digitalis in the ordinary doses, at least during the acute inflammatory stage. Blisters will be found useful, under the same restrictions as described in bronchitis. I have seen the best effects from opiates, during the decline of the disease, in allaying irritability, and violence of the cough, as well as by producing sleep. Formerly great objections were entertained against the employment of purgative medicines in this disease; but these are now happily removed. It is certainly necessary to keep the bowels open; for which purpose, I generally give a smart dose of physic immediately after the first bleeding, and some hours before the exhibition of the tartrate of antimony, and assist its operations by means of injections. Subsequently, if the antimony do not operate upon the bowels, evacuations should be produced daily by injections, as medicine taken by the mouth will not be retained by the stomach.

The regimen, it is almost unnecessary to remark, should be strictly antiphlogistic; and with a view to prevent vomiting during the antimonial treatment, as little liquid as possible should be allowed. During recovery from all acute diseases of the chest, visitors should be excluded, as talking, even in an under tone, is injurious to the patient.

CHAP. IV.

PLEURITIS.

Phenomena.—As in other acute diseases, pleuritis is generally ushered in by a cold stage of greater or less severity. The patient complains of fixed pain in the side, over which he can place his finger, which is described as a stitch, catching and interrupting his breathing every now and then, particularly when he fills his lungs beyond a certain extent. The pain is sometimes so severe, that the patient, in describing it, says it is like a stab with a sharp instrument. In pleuritis the breathing is difficult and anxious; but it is short, and not so heavy and oppressed, in the first instance at least, as in inflammation of the other tissues. There is also cough, which aggravates the pain very much: the expectoration is thin and watery, very different from that in pneumonia and bronchitis. The pulse, generally speaking, is quicker and harder, and the heat of skin is more intense than in pneumonia and bronchitis; but inflammation of the pleura, the most intense and extensive, may take place, and terminate fatally, without being detected by these symptoms. At present, I may remark with regard to the heat of skin, that it is greatest over the thorax in pleuritis, and very often I have felt it much increased over the seat of the disease, at which point external pressure is much complained of. The tongue, however much furred it may be, soon becomes dry. The urine is scanty, and high-coloured. The functions of the brain are also sometimes disturbed.

There is a painful affection, commonly ascribed to the intercostal muscles, termed pleurodynia, which gives rise to all the symptoms above described, and it is often impossible to determine the one disease from the other except by auscultation and percussion. A symptomatical physician may now and then guess right, but it is only to be considered as a guess. Three such cases occurred to me within a very short space of each other, one only of which proved to be pleurisy, although, from the slightness of the symptoms, and the character of the patient, who was always complaining of trifles, I least expected to find it. Dr Ferrier, (at p. 86. of his 2d vol.) states the case of a boy, who died from extensive inflammatory action of the pleura, and effusion into the pericardium, who nevertheless had "no cough, no difficulty of breathing, nor pain in his breast, and I could not find, (says Dr Ferrier,) from the most careful inquiry, that he had ever made such complaints. There was great paleness over the whole skin. He was torpid; without delirium, or the symptoms of oppression common in typhus." In his observations upon this case, he states, "In this case, an active inflammation through the whole extent of the pleura, producing exudation and adhesions, was not indicated by any symptom during the continuance of the complaint."

Stethoscopic Signs.—In pleurisy these signs are of less importance in directing the treatment, than in pneumonia and bronchitis, because there is no particular sound elicited by the stethoscope in pleurisy, till the inflammation has produced effusion. But great advantage is nevertheless obtained from the negative proof afforded by auscultation, which will inform us if either of these two diseases exist. Independently of this, however, the stethoscope is of use in pleuritis, by informing us when effusion really exists, which, it is admitted, cannot be done by the ordinary signs.

In the early stage of pleuritis, the respiratory murmur is less distinct, but not otherwise changed, over the site of the diseased part. When effusion takes place, the sound in the lower part of the chest becomes dull, and when the patient is desired to speak, his voice is heard through the stethoscope, at the diseased part, small, sharp, and very tremulous, to which

Laennec has given the name œgophony. When the effusion is very extensive, and in considerable quantity, the sound elicited by percussion is very dull, and respiration is not heard unless at points where old adhesions exist, which prevent the lungs from being compressed and forced away from the ribs. On examining the naked chest, when there is great effusion, that side of the thorax is perceived to be the largest; the ribs are found more distant from each other, and more fixed during respiration, than on the healthy side. Œgophony exists in hydro-thorax also; but this is of little consequence, as the general history of the case, and local symptoms, must always be appealed to, and weighed as necessary parts of the evidence in each case.

It must be recollected, that pneumonia and pleuritis frequently co-exist; but neither is that circumstance of much consequence, being both inflammatory diseases, and requiring the same general remedies.

Appearances on Dissection.—The pleura, when inflamed in the first stage, shews a great number of red points, which are sometimes produced by slight ecchymosis in the cellular membrane, beneath the pleura; red vessels are also frequently observed, and the spaces between the vessels, and between the punctæ, appear natural. The pleura is rarely found thickened, although it may appear to be in that state, the deception arising from the deposition of coagulable lymph, the removal of which shews the pleura without alteration of structure. It has frequently occurred to me, in chronic pleuritis, to be able to separate what appeared to be two and even three layers of new membrane. There is often found extensive effusion of a serous fluid like whey, exactly similar to that seen in the abdomen in peritonitis. Sometimes we find the lungs attached to the pleura lining the general cavity, by an intermediate deposition of lymph; when recent, the parts are easily separated, and there is the best evidence for believing that the new matter becomes organized. Occasionally (particularly in chronic pleuritis,) we find both the pleura pulmonalis and costalis inflamed, and much thickened by the deposition of lymph, with or without an effusion of serum mixed with lymph, which resembles thick pus; masses of lymph, weighing half an ounce

or more, are sometimes found in the bottom of the cavity. If there be no old adhesions, and the effusion be large, the lung, greatly compressed, will be found lying close to the spine, perhaps without any alteration of structure. Mortification is one of the rarest results of inflammation of the pleura. Ulceration is also an unusual termination, but I have seen two instances of this lesion; the ulcerations were extensive, and affected not only the pleura pulmonalis, but the pleura costalis, as well as that part which forms the mediastinum. In one case, of which I have a very beautiful representation, six large ulcerated spots were observed upon the anterior surface of the right lung, one of which was two inches in length, and above an inch in breadth, occupying almost a regular oblong space, whilst the rest approached to the circular form. There were eight or nine ulcerations on corresponding parts of the pleura costalis, of an oval shape,—one very large; there was also one above two inches in length on the mediastinum. The pleura was very vascular, and the margin of each ulceration was red, thickened, and somewhat indurated; no trace of the pleura could be perceived on the ulcerated surfaces, except here and there a small ragged portion was met with. The ulcers were covered with a puriform matter. The lung was somewhat compressed, and on making incisions through the ulcerated parts, its substance was found to be red and hard; a state of the organ which extended to no great depth, in some places not greater than a line, and nowhere more than about the third of an inch; the rest of it being engorged. In this case, which I did not see till within a few hours of the fatal termination, no suspicion was entertained of the true nature of the affection; the treatment was conducted by two physicians, for whose talents and practical experience I entertain great respect; but it may be mentioned, that neither of them used the stethoscope. At first, it was supposed there was some pulmonary affection, for which the lancet was used; but very soon the vital powers began to sink, when the disease was denominated typhus fever, and treated accordingly.

A case of pneumonia, complicated with pleuritis, presented itself to me since the publication of last edition, which threw some light upon this very unusual termination of inflammation

of the pleura. The case was very severe; the subject of it, a soldier on furlough; the cause, exposure, and drinking ardent spirits to great excess. When he fell under my care, the disease was of ten days duration, and he was sent by his friends to the Royal Ordnance Hospital, that he might enjoy the comforts of such an establishment.

On dissection, both lungs were found universally solidified, and the pleura inflamed. There were numerous and extensive ecchymotic spots on the surface of the lungs, as well as on the pleura costalis, and there were large masses of lymph effused here and there. There were likewise several puriform collections between the pleural surfaces. On laying these freely open, pure pus was found in two or three places; in others, a small quantity of fluid, or coagulated blood, mixed with pus. In these places there was loss of substance, and an appearance of ulceration, which would have been more complete had the patient lived a few days.

Treatment.—Little need be said respecting the treatment of pleurisy, farther than that bleeding is to be had recourse to repeatedly and copiously. Leeches applied over the seat of the pain, are often of very singular benefit; in some cases no other means of detracting blood will be required. Antimony may be employed, together with laxatives and an occasional opiate. The antiphlogistic regimen is absolutely required, and blisters are often useful.

When called to a case of pleurisy, a careful investigation should be made to ascertain whether the disease may not have advanced already to its extreme termination. If so, bleeding may do much mischief, and we shall be obliged to place our hopes of safety on some of the other means recommended in inflammatory diseases, more particularly on blisters, digitalis, antimony, opium, and calomel.

In pleurodynia, a warm bath, and a dose of Dover's powder, will, in general, be sufficient to mitigate the violence of the pain; a bandage, placed tightly round the thorax, is serviceable, by preventing the motion of the ribs. A good practical man, however, will always be found to act on the safe side; and when in doubt, he makes it a rule to give the pa-

tient the benefit of that doubt, by employing the means required in the more severe disease.

Dr Rush, in the 4th volume of his Inquiries, in considering the probability of a connection between a morbid excitement at the neck of the bladder, and the safety of more vital parts of the body, states, that "the idea of this connection was first suggested to me four and twenty years ago, by the late Dr James Leiper of Maryland, who informed me he had sometimes cured the most dangerous cases of pleurisy, after the usual remedies had failed, by exciting a strangury by means of the tincture of Spanish flies, mixed with camphorated spirit of wine." Page 35.

I have only further to state, that relapses, in all inflammatory complaints of the chest, are generally to be attributed to improper exposure, imprudence in diet, and to the too early exertion of the voice; therefore it is always safer to continue the restrictions, and particularly the antiphlogistic regimen, a day or two longer, than to allow liberties to be taken a single day too soon. The practitioner finds himself often foiled on these points, by the imprudence of patients and attendants; in such circumstances, it is an excellent plan to keep the patient slightly under the influence of antimony, which will prevent the generality of people from feeling much inclination to eat, speak, or sit up.

CHRONIC PLEURITIS.

According to Laennec, there are three kinds of chronic pleurisy:—1*st*, That which is chronic from its origin; 2*d*, Acute pleurisy becoming chronic. 3*d*, Pleurisy complicated with certain organic productions on the surface of the pleura. I shall follow a different plan in this work, and first describe the chronic pleurisy which terminates in empyema, and afterwards that which terminates in permanent contraction of the chest.

Empyema.—This term implies the existence of matter in the chest, the effect of chronic pleurisy, or the bursting of a pulmonary vomica into the cavity of the pleura;—of this last affection I shall speak, after treating of phthisis. Whether

the empyema be produced by a pleurisy which was chronic from the first, or considered as the termination of the acute form of the disease, the effect is the same,—there being generally dyspnœa, the breathing being easier in the erect posture; dry tickling cough; hectic fever; enlargement of one side of the thorax when compared with the other, the intercostal spaces being increased; the patient cannot lie except on the diseased side: sometimes fluctuation may be felt. This form of the disease appears to have been well known to Hippocrates, although he confounded it with pneumo-thorax.*

Stethoscopic Signs.—Percussion gives a dull sound, and the respiratory murmur is not heard, except in the region of the spine, which will be puerile on the other side; but here we must recollect that the effusion may be double, although this is a rare circumstance.

Treatment.—When effusion is discovered, the sooner the chest is tapped the better; as remarkable recoveries have taken place, shewing that there is still some hope. There is, however, some difference of opinion respecting the propriety of drawing off the matter all at once, or by degrees. Although my experience on this subject is very limited, yet I am induced to believe that the more quickly the matter is removed the better. A most interesting case, successfully treated by Dr Pitcairn of Edinburgh, is recorded in the 2d vol. Edin. Med. Chir. Transactions, p. 229. During recovery, we should be on our guard to prevent, by means of regimen, a renewal of the inflammation. Instances are upon record, in which the matter found its way out of the chest through the parietes, and also through the bronchial tubes.

The other kind of chronic pleurisy to which I wish to allude, is that which leads to permanent contraction of the chest. The deformity is readily perceived on looking at the naked chest; the affected side is found to be narrower than the other, and the length is equally diminished in consequence of the ribs being drawn closer to each other. The muscles are also much smaller, which adds to the disproportion of the

* An excellent paper on Empyema, &c. by Dr Duncan jun. in the 93d No. of the Edin. Med. and Surg. Journal.

chest. The patient leans to the affected side; in many cases so much so, as to make him appear as if he had an affection of the spine: this happened in Dr Pitcairn's case above quoted.

Laennec states, that it was long before he had an opportunity of ascertaining to what cause the contraction of the thorax was owing, which he at last discovered to depend on fibro-cartilaginous adhesions between the pleura pulmonalis and costalis. He nevertheless thinks that a degree of contraction is produced by the common cellular adhesions when very extensive; for he states, that in every case wherein he found one lung adhering throughout, by means of a pretty copious cellular tissue, he has always thought that side of the chest narrower than the other. I have seen several cases of contraction of the chest from this cause; one where the contraction was in the left side, and evidently connected with some affection of the heart and pericardium. Some years ago, when accidentally at Chichester, Dr Forbes, the accomplished translator of Laennec's work, was kind enough to take me to visit a patient who was affected in this manner, and in whom the contraction succeeded, if I remember rightly, to a severe attack of acute pleurisy.*

* Hydro-thorax will be treated of in the chapter on Dropsy, in the 2d vol.

CHAP. V.

HŒMOPTYSIS.

This term signifies a discharge of blood from the air-passages, which occurs principally under three forms :—1*st*, A general exhalation from the mucous surface of the bronchial tubes. 2*d*, From apoplexy of the lungs. 3*d*, From an erosion of a blood-vessel in a tubercular excavation in the lungs, and which falls to be considered with phthisis pulmonalis.

The first variety is the most common, and is not generally attended with much danger. It frequently attacks women at the monthly periods, when the menstrual discharge is more scanty than usual, or is entirely suppressed : girls are often so affected at the age of puberty, immediately before the catamenia should appear ; but the male sex are not exempt from it. I have seen it appear in men, upon the sudden drying of an old sore, or the disappearance of a long-standing eruption ; it sometimes succeeds to mental affliction. The discharge is generally preceded by some constitutional disturbance ; the bowels are found out of order, the tongue foul ; the patient has passed somewhat restless nights, with more or less fever, and feels most comfortable in the half-erect posture. At last there is cough, which is often constant and distressing, with more or less dyspnœa, particularly when moving about. The pulse varies much according to the age and constitution of the patient, and the period of the disease ; but generally it is quick and bounding. I have commonly seen this form of the dis-

ease creep on insidiously; but at the same time it must be confessed, that a bloody expectoration sometimes takes place suddenly, immediately after the occurrence of cough and dyspnœa. The expectoration has a peculiar appearance; it resembles red currant jelly,—sometimes not so much tinged, but like a mixture containing different proportions of apple-jelly with red currant; it is sometimes copious, but in general the quantity discharged is moderate. Sometimes, however, the expectoration is of a mixed kind, small masses of coagulated blood being observed. Occasionally, indeed, the discharge is quite bloody, but moderate in quantity, and very frothy; but in some cases pure blood in large quantities is discharged. On all occasions, it is much increased by every exertion, either of the body or the voice. According to Laennec, the chest is perfectly sonorous. On applying the ear, the crepitous râle is not heard as in pulmonary apoplexy; but there exists a mucous râle, which is more or less extensive, according to the quantity of blood effused into the air-passages.

Appearances on Dissection.—I have never been present at a dissection of a person who died of this form of the complaint; but Laennec states, that, "on examining subjects who have died of bronchial hæmorrhage, or while labouring under it, more or less of coagulated or fluid blood is found in the bronchia. On the surface of the coagula, we sometimes observe fibrinous concretions in the form of polypi. The mucous membrane is commonly a little softened, and impregnated or tinged with blood through its whole depth." *

Treatment of the first variety.—This is in general very simple. Blood-letting is not necessary, unless the patient be plethoric, or there are marks of an irregular determination of blood, which we wish to remove, when one bleeding will in general suffice. The leading points to be attended to are the following:—Perfect rest, silence, abstinence from every stimulant; a very small quantity of food is to be taken at a time. The patient should be placed, if possible, in a large, cool apartment, with light clothing; and a pretty smart action kept

* Forbes's Translation, page 128.

up on the bowels, by means of frequently repeated laxatives. If, however, the discharge still continue, with a strong pulse, small doses of the tartrate of antimony are to be used, to produce some degree of nausea; but the most potent remedy with which I am acquainted, is the acetate of lead, which I commonly prescribe in such cases, in doses of two, three, or four grains every third or fourth hour; but I never use it till the plethora is considerably reduced. A great many other astringents have been employed, as sulphuric acid, alum, kino, the bark of the pomegranate, and the ratany root.

The second variety, or that which proceeds from pulmonary apoplexy, is marked by a greater degree of hæmorrhage, which is sometimes so violent as to resist all medical treatment. The pathology of this variety of hœmoptysis was, as Dr Forbes remarks, entirely unknown before the publication of the first edition of Laennec's work, although some obscure notices had been given by others before that period.

Symptoms.—This disease is, in general, preceded by symptoms common to hæmorrhages from other parts of the body; such as chilliness,—cold extremities, followed by flushes of heat and redness of the cheeks, headache, quick and extremely hard pulse,—palpitation of the heart, præcordial oppression. The discharge from the lungs is attended with dyspnœa,—suffocating feeling in the chest, sometimes, according to Laennec, with great pain,—oppression at præcordia,—sense of rawness of the throat, and a saltish taste in the mouth. The expectoration consists of bright and frothy, or black and clotted blood, sometimes intermixed with saliva or a little mucus.

The pulse is frequent and full, with a feeling of vibration; the heat of skin is not considerable; sometimes I have seen profuse perspiration. The spitting of blood is copious, and returns by fits with cough, oppression, anxiety, intense redness or extreme paleness of the face, and coldness of the extremities. When the hæmorrhage is very great, says Laennec, "it comes on sometimes with a very moderate degree of cough, and is accompanied by a convulsive elevation of the diaphragm, like that which takes place in vomiting." This accounts for the expression, "*vomiting of blood*," which is used by most persons who have suffered in this way. He thinks that part

of the discharge very often comes from the stomach, and that hæmatemesis frequently co-exists with hœmoptysis. Laennec has known ten pounds of blood lost in this manner in forty-eight hours, by a young man who died under the hæmorrhage. In other cases, he has seen about thirty pounds lost in a period of fifteen days; but, in general, the discharge does not exceed 12 or 15 ounces in twenty-four hours, and in some cases, not three or four.

Percussion, in general, gives no information. Auscultation, however, furnishes us with the two principal signs of pulmonary apoplexy,—the want of the sound of respiration over a circumscribed space, which may be more or less extensive, and a crepitous râle round this space.

Appearances on Dissection.—Having had comparatively but few opportunities of observing these appearances, I shall take the liberty of copying Laennec's account. "Some part of the pulmonary system has undergone great changes, being indurated to a degree equal to the most complete hepatization. The induration, however, is very different from the inflammatory affection of the lungs distinguished by this term. It is always partial, and scarcely ever occupies a considerable portion of the lungs; its more ordinary extent being from one to four cubic inches. It is almost always very exactly circumscribed, the induration being as considerable at the very point of termination as in the centre. The pulmonary tissue around is quite sound and crepitous, and has no appearance whatever of that progressive induration found in the peripneumatic affection. The substance of the lung is indeed often very pale round the hœmoptysical induration; sometimes, however, it is rose-coloured, or even red, as if tinged with fresh blood; but, even in this case, the circumscription of the indurated part is equally distinct. The indurated portion is of a very dark red, exactly like that of a clot of venous blood. When cut into, the surface of the incisions is granulated, as in a hepatized lung; but in their other characters, these two kinds of pulmonic induration are entirely different. In the second degree of hepatization, along with the red colour of the inflamed pulmonary tissue, we can perceive distinctly the dark pulmonary spots, the blood-vessels, and the fine cellular in-

tersections; all of which together, give to this morbid state the aspect of certain kinds of granite, as has been already observed. In the induration of hœmoptysis, on the contrary, the diseased part appears quite homogeneous, being altogether black, or of a very deep brown, and disclosing nothing of the natural texture of the part, except the bronchial tubes and the larger blood-vessels. The latter have even lost their natural colour, and are stained with blood. The veins of the affected part, and also those adjoining, are sometimes filled with a firmly coagulated and half-dry blood. On scraping the incised surfaces of these parts, we can detach a small portion of very dark, half-congealed blood, but in a much less proportion than we can press out the bloody serum from a hepatized lung. The granulations on the incised surfaces have also appeared to me larger than in cases of hepatization. Sometimes the centre of those indurated masses is soft, and filled with a clot of pure blood.

"This morbid affection is evidently produced by an effusion of blood into the parenchyma of the lungs, in other words, into the cells. From its exact resemblance to the effusion that takes place in the brain in apoplexy, I have thought the name pulmonary apoplexy very applicable to it. Some examples have occurred of sudden death from hœmoptysis, wherein the substance of the lungs was found lacerated, and containing clots of blood. Corvisart mentions one extraordinary case of this kind, in which the extravasation had lacerated the lung, and filled the cavity of the pleura. The hœmoptysical engorgement above described, is only a lesser degree of the same affection, in which the effused blood (still in some degree under the influence of vital action) coagulates in the air-cells, in such a manner as to form an intimate union with the pulmonary tissue, very different from what would be produced by the mere physical coagulation of the blood. We sometimes find two or three similar indurations in the same lung, and frequently both lungs are affected at the same time. They take place most commonly in the central parts of the lower lobe, or towards the middle and posterior part of the lungs: it is consequently on the back and inferior part of the chest, that we ought to search for them with the stethoscope.

"This affection is as easily distinguishable from the congestions that take place after death, as from the alterations produced by the peripneumony. The sanguineous congestions of the dead body consist of an accumulation of blood intermixed with serum, often spumous, which flows plentifully on an incision of the part, and tinges the lungs of a livid or vinous colour. Being the mere consequence of gravitation, the engorgement is found most considerable in the most depending parts of the lungs, and gradually lessens towards the superior parts. Where most engorged, the part still retains some crepitation, and the incised surfaces are never granulated, even when the congestion is so great as to destroy the spongy character of the lung. By washing, we can, in every case, remove all the red, and restore the lung to that sort of flaccidity which it possesses when compressed by a pleuritic effusion. The engorgement of hœmoptysis, on the contrary, is accurately circumscribed, very dense dark-red or brown, granulated, and almost dry when incised, and grows pale by washing, but without losing any part of its consistence. Whatever may be the severity of this disease, resolution seems to take place with considerable facility, since we find a great many cases of recovery after severe hœmoptysis. I have not had many opportunities of tracing the progress of this resolution by morbid dissection; but in the small number of cases which I have met with, it has appeared that the indurated parts passed successively from dark-red to brown and pale-red; and that, in proportion as the colour faded, the parts lost their granular texture and their density. I do not think that this obstruction is followed, at least constantly, by œdema, as is the case with the obstruction of peripneumony. When the resolution is complete, it leaves no trace of disease in the pulmonary substance, since I have never been able to find any vestige of the induration in subjects who had been affected with severe hæmorrhage at a period of some years—or only some months—anterior to their death."*

Treatment of the second variety.—The treatment depends very much upon the condition of the lungs, the age and con-

* Forbes's Translation, p. 184.

stitution of the patient, and upon the quantity of the blood already lost. The plan of bleeding, in every case of bloody discharge from the lungs, is very bad; because it is bleeding for a name, without reference to pathological considerations. In this variety, however, copious venesection is to be employed early, and carried to such an extent, as will render a repetition generally unnecessary. It is employed to reduce plethora, and to moderate the action of the heart and arteries,—to change the determination of blood quickly,—and, on some occasions, it is to be carried the length of inducing syncope. It requires considerable experience to act properly on such occasions; for sometimes, in very stout plethoric people, we ought to take away a large quantity of blood, say to the extent of three or four pounds; and to prevent syncope from taking place before we obtain a sufficient quantity, the operation should be performed when the patient is in the recumbent posture. When we wish to induce syncope, or to alter the tide of the circulation as quickly as possible, and at a small expence of blood, a large orifice should be made, or a vein in each arm opened at the same time, and the patient kept in the erect posture. It is curious to observe, that Laennec recommends bleeding in large quantities, even to syncope, in this complaint, and pursues quite an opposite course in pneumonia. With regard to bleeding in this disease, he uses the following language:—"But the extreme danger which attends the hœmoptysical induration, and possibility of its resolution, ought to make us boldly use copious venæsection from the onset of the disease. One blood-letting of twenty or twenty-four ounces on the first or second day, will have more effect in checking the hæmorrhage, than several pounds taken away in the course of a fortnight. *It is even beneficial, in general, to induce partial syncope by means of the first bleeding. In cases of this kind, the fear of exhausting the patient's strength is without grounds, since we know that the most copious venæsection falls short of the loss of blood sustained from pulmonary hæmorrhage in young and robust subjects, even in the course of a few minutes; while the debilitating effect of the hæmorrhage is infinitely greater than the loss of blood produced by the lancet.*"

After great losses of blood, whether by the lancet or other-

wise, the state of the circulation must be carefully watched; —much more carefully, the larger the quantity lost; and we must take care not to lose the vantage-ground, by subsequent imprudence on the part of the practitioner, or on that of the patient. For this purpose, perfect rest, quietness, and complete silence, are to be enjoined; cool air is to be freely admitted; but I have seen great injury done by keeping the temperature of the body too low, for too long a period, which promotes the tendency to internal congestions. One bleeding ought in general to suffice, provided it be carried far enough. The circulation is afterwards to be controlled, by nauseating doses of antimony, the rigid employment of the antiphlogistic regimen, and the exhibition of laxatives. But if the patient have lost too much blood before we are called, or should the hæmorrhage continue after copious bleeding, then we must trust to the effects of the acetate of lead, in considerable doses, which I have seen useful in suppressing hæmorrhages which were afterwards proved by dissection to have proceeded even from a ruptured blood-vessel in the lungs.

Drawing blood by leeches is scarcely ever admissible, unless to mitigate some local pain in the chest, which, however, is better effected by a blister.

If the patient be thirsty, acidulated drinks may be allowed.

Some have recommended ice to be piled upon the chest in such cases, which surely must be a dangerous practice.

Hœmoptysis sometimes takes place in consequence of aneurism of the aorta, of which I have seen three cases, all of which proved fatal; the blood found its way into the bronchial tubes, by absorption and ulceration of that part of the lung which came in contact with the aneurismal sac, and which, in fact, formed at last a part of the sac itself. In two of these instances, the parts were strengthened, and life preserved for a considerable time, by the usual deposition of coagulated blood found in aneurisms, till at last the fatal hœmoptysis occurred, and the patients died in a few minutes. In the third case, a deposition of coagulable lymph had perhaps for a long time prevented the eruption of blood, which at last, however, took place, but was soon suppressed by moderating the force of the circulation by bleeding; but it returned re-

peatedly, and at last carried off the patient almost in a moment. On dissection, a considerable portion of the lung was found injured, but the loss was partly repaired by a thick and dense layer of coagulable lymph, the upper part of which was found detached, at which point the blood had passed into the bronchial tubes.

I have seen hœmoptysis take place, probably from hypertrophy of the heart; and I once witnessed a dissection, where complete apoplexy of the whole of one lung had taken place, the other having been for years, as far as we could judge from the history of the case, in the most perfect state of hepatization from chronic inflammation. The patient complained occasionally of attacks of asthma, and experienced much embarrassment in going up hill or ascending a stair. He died in a moment, after discharging a mouthful or two of blood. A drawing, shewing the external appearance of both lungs, and their internal structure, is in my Museum.

CHAP. VI.

PHTHISIS PULMONALIS.

Phenomena.—If a person be frequently apt to take cold from slight causes,—if his lungs be easily irritated at all times, so as to produce coughing,—is of spare habit and ill-formed thorax,—and if many of his predecessors have died of phthisis, considerable apprehensions ought to be entertained for his safety. Care and good management may, however, be useful in meliorating symptoms and warding off danger.

If an individual have laboured under bronchitis, peripneumony, or pleurisy beyond the ordinary period, in spite of the usual means employed early, tubercles may be suspected to exist already, or their formation may be dreaded; and if any predisposition have been shewn, the result of the case will be still more doubtful. If he continue coughing, losing flesh, and looking pale, the pulse becoming more and more frequent, with increasing dyspnœa, and expectoration of a copious mucus almost colourless and semi-transparent, the chances are much against him; particularly, if the sound elicited by percussion be dull,—if the respiratory murmur be not heard at all, or only indistinctly, the patient may be almost declared to have confirmed phthisis. If the skin become discoloured, with diminution of flesh,—if shooting pains be felt in the breast and back, between the clavicle and scapula,—if there be frequent cold shivering,—if the nails are turned in,

the pulse still increasing, with viscid perspirations,—if the expectoration be cream-coloured, looking granular, adhering firmly to the vessel, or if it should look bloody, or like milk-and-water, with a cheesy-looking matter floating on it, a still worse opinion of the case may be formed. If, however, he be troubled with hœmoptysis now and then,—if the expectoration continue for some time,—if his hair look mangy, with increasing dyspnœa and weakness,—and if the sound in the upper part of the chest, instead of being dull as before, become clear,—if a gurgling noise be heard on applying the ear to the chest, or if, when the person speaks, the sound of the voice appear very clear through the stethoscope,—the person may, without any doubt, be pronounced to be affected with Pulmonary Consumption.

Sometimes the first and most important symptom throughout the affection, is hœmoptysis. I have seen some cases where diarrhœa came on with the cough, and continued throughout the rest of the patient's life; in general, however, it exists for the last six weeks or two months only. I have rarely seen a person live beyond twelve weeks, after the first appearance of diarrhœa, accompanied by griping pains in the bowels. Sometimes the bowel-complaint alternates with violent perspirations, but occasionally they co-exist. Sometimes an individual has no pain from the beginning; at others, the pain is occasionally very acute, not only in the bowels, but in the thorax. Occasionally there is little cough, and little or no expectoration, the mildness of the symptoms causing great uncertainty in forming a diagnosis; and truth compels me to acknowledge, that auscultation and percussion cannot always remove the mystery which hangs over the case; but as soon as the tubercles soften, and become discharged through openings into the bronchial tubes, then the stethoscope will commonly be of use.

According to Louis, who has written the best treatise upon this subject which has yet appeared, hœmoptysis occurred in two-thirds of his phthisical cases, and on many occasions it took place before the expectoration and the cough. He has been led to conclude, that a profuse hœmoptysis renders the existence of tubercles in the lungs very probable. This symp-

tom shewed itself more frequently in women than men, in the proportion of three to two.

It is frequently difficult to say, whether the pain in the chest be owing to an affection of the muscles, or the formation of tubercles in the lungs; in the latter stages there can be no doubt that it is produced by pleuritic inflammation in the course of the formation of adhesions, which are almost constantly found when a cavern is situated near the surface of the lung.

Diarrhœa shewed itself in all Louis's cases; and when I state the appearances on dissection, it will be seen that this symptom is produced by irritation and ulceration of the bowels. Sometimes the appetite is not at all impaired, even when diarrhœa prevails; at other times the appetite is bad and fastidious, with frequent attacks of nausea, and sometimes vomiting. Occasionally there is pain in the right hypochondriac region. The tongue presents various appearances; sometimes in the first part of the disease, it is perfectly clean and moist; at others loaded, exceedingly rough and cracked, with considerable redness at the edges; and in the last stage, when there are extensive ulcerations in the bowels, it has the same appearance as that already described in dysentery, viz. as if skinned, perfectly raw, red and glazed. The lining membrane of the mouth and tongue is sometimes covered with aphthous ulceration, which aggravate the patient's sufferings very considerably. Occasionally the epiglottis, pharynx, and œsophagus are similarly affected, producing great thirst, and difficulty in swallowing fluids as well as solids.

Appearances on Dissection.—Bayle divided phthisis into nearly as many species as there have been diseased appearances found in the lungs; but Laennec and Louis, on the other hand, think there is only one species of phthisis, the tubercular. The latter author states, that he has not examined the body of one subject, without finding as the principal lesion, tubercles or tubercular excavations, or the demi-transparent grey granulations; he joins Laennec, therefore, in stating, that the existence of tubercles in the lungs is the cause, and constitutes the proper character of phthisis.

Before describing the various morbid appearances found in

subjects who have died of phthisis, I shall seize the opportunity of stating some particulars respecting those accidental formations which are called tubercular. They are bodies of a yellowish dull white colour, variable in consistence, which subsequently soften. When situated in the lungs, they are sometimes expectorated by the bronchi, giving rise to excavations more or less extensive. They are always more numerous, larger, and more advanced in their developement, towards the superior part of the lungs, than in the lower lobes. Out of one hundred and twenty-three dissections, Louis mentions having seen two exceptions only to this rule; for some years past I have seen one exception only, and in it the superior lobe was quite healthy. Thenard's analysis of tuberculous matter, gives 98 parts of animal matter in the 100; the remaining 2 parts consist of phosphate and carbonate of lime, muriate of soda, and oxide of iron. According to Laennec, tuberculous matter may be developed in the lungs under two forms,—insulated bodies, and interstitial injection or infiltration. He divides the insulated bodies into four kinds,—miliary, crude, granular, and encysted; the second has three varieties,—the irregular, the grey, and the yellow. Under any of these forms, the matter presents, in the early stage, a grey semi-transparent substance, which gradually becomes yellow, opaque, and dense; it afterwards softens, and gradually becomes converted into a fluid, like thick cream or pus, which being expelled through the bronchi, leaves cavities in the lungs, which were formerly termed ulcers.

Miliary and Crude Tubercles.—This variety of tubercle is the most common. The size varies from a millet to a hemp seed, very irregular in shape, and as firm as cartilage. At first they are distinct, and afterwards become grouped together, and very often run into one another, so as to form one mass. A small yellowish opaque point appears near the centre of each tubercle, which gradually enlarges, till it involves the whole mass; it cuts like cheese, and constitutes the crude tubercle. Sometimes the miliary tubercles do not coalesce, but continue to the last distinct, and sometimes acquire considerable size. Sometimes distinct masses are seen, which are frequently the product of many tubercles united together.

Granular Tubercles.—These are spherical shaped bodies, interspersed, perhaps, through a whole lung; they were first described by Bayle, and were considered by him to be distinct from tubercles. But Laennec and Louis assert, that they are nothing more than the ordinary tubercle in its first stage; the former distinctly states, that the only difference between these granulations and the yellow tubercles, is that between green and ripe fruit; "besides (says he, at page 275,) the miliary granulations are never met with, except in lungs in which there exist at the same time other tubercles of a larger size, and sufficiently advanced to render their character no longer matter of question." My observations oblige me to dissent from this statement. Within the last six years, I have seen a considerable number of instances, in which granular tubercles pervaded the whole of both lungs; they were all nearly about the same size; the surrounding pulmonary tissue was of a red colour. Several drawings shewing these appearances, are in my port-folio. In these cases, there was little cough, and very slight expectoration; and in one adult, the lungs weighed nine pounds and three quarters. Three cases were children; in two of which, tubercles were found on the arachnoid coat of the brain also; and in one, the membranes on one of the hemispheres were ulcerated in a great many points. This kind of tubercular formation in the lungs has long engaged my attention, and I feel convinced they are the air-cells distended and enlarged by a diseased deposition, probably the consequence of inflammation of their inner membrane. A similar appearance may be produced by pouring a little quicksilver into the air-passages of a rabbit, if it be allowed to live for some days after the experiment. At one time, I felt disposed to believe, that bronchitis was the cause of almost all tubercular formations in the lungs; which opinion appeared to be so far confirmed by a well known fact, that the majority of individuals who die of phthisis, attribute their illness to what they call a neglected cold; but I have been induced to abandon this opinion.

Encysted Tubercles are rare. I have seen cases where one, two, or three encysted tubercles were found in the lungs, about the size of a filbert, inclosed in a cyst. Two of the cases died

of hooping-cough, and another of the disease called tabes mesenterica. In all these cases, the surrounding substance seemed somewhat firmer and redder in colour than usual, but in other respects, there was no disease in the substance of the lungs. Laennec says they are rare, and Louis declares he has only seen one instance of this formation. On making a section of the tuberculous mass, it appears of a whitish colour, semi-transparent, and of a texture like hard cheese; but for a more minute account, I must refer to the works of the above authors.

With respect to the *Tuberculous Infiltration*, I have to observe, that it is commonly of a greyish white colour, sometimes with a rose tint, and is found either surrounding tuberculous excavations, or existing in large masses, occupying the whole lobe of a lung, having no connexion with the miliary tubercle; indeed, I have a preparation in which every part but the superior lobe is infiltrated with this matter, and I have an idea that this may be one of the occasional ultimate terminations of the granular tubercle. This opinion is somewhat supported by Laennec's description of the grey tuberculous infiltration.

According to Laennec, tubercles first shew themselves in the summit of the upper lobe, more particularly on the right side; while Louis states, that they are more frequently met with in the left lung. My own experience corroborates Laennec's statement.

An important question is still undecided, and perhaps will remain so, as to the cause of this singular formation. Some insist, that tubercles are the product of inflammation of a peculiar kind; while others, with as much confidence, allege that they have nothing whatever to do with inflammation, except in as much as they sometimes excite it by mechanical irritation. Many advocate the fluid origin of tubercles, and Dr Baron maintains that they are primitively hydatids; and although he has supported his doctrines with much learning and ingenuity, yet I feel persuaded he has not convinced a single pathologist.

The body of a person who has fallen a victim to this very dreadful disease, is found greatly emaciated, sometimes to the

last degree, and the chest looks contracted on itself, which may, however, be a deception produced by the general emaciation. Laennec thinks the contraction of the chest is real, and is to be attributed to two causes. 1*st*, To the existence of pleurisies, to which phthisical patients are extremely liable. 2*dly*, To the attempts made by nature to cure phthisis. On opening the thorax, the heart is sometimes observed to be small; Laennec says, it is almost always remarkably so. The lungs are sometimes found adhering throughout their whole extent to the ribs, and the left lung is frequently attached to the pericardium, which is occasionally distended with serum. Sometimes one side of the thorax contains a puriform matter, with a considerable quantity of air, the result of a vomica bursting into the cavity, leaving a communication open with the bronchial tubes; when this is discovered, the person is said to be affected with pneumo-thorax, which may be ascertained by the splashing noise which is heard, when the patient's body is shaken by the shoulders; the stethoscope communicates a peculiar sound, called the *metallic tinkling*. The powers of the constitution, however, employed to prevent this accident, are generally successful, by effusion of lymph, and the agglutination of parts. These adhesions are mostly found to affect the superior lobes, and sometimes are so dense, that it is impossible to separate them with the fingers, without tearing the lung itself.

On removing the lungs from the body, they are found to be much heavier than natural; one case I have already mentioned, in which they weighed nine pounds and three quarters. Notwithstanding the assertion of Laennec to the contrary, I have several times seen the marks of the ribs left upon the posterior and lateral parts of the lungs, when they were very heavy. It was seen in two cases in which the lungs were extremely dense and large, the effect of long-protracted chronic peripneumony.

On making a longitudinal section of the lungs, which will usually be found "to cry under the knife," we sometimes find one excavation only, which may be full, none of the contents having yet found their way into the bronchial tubes; and when solitary, it is almost always in the superior lobe. In gene-

ral, however, many cavities are found, containing more or less softened tuberculous matter, and the most striking difference will be observed in the progress of the tubercles in different situations, being commonly farthest advanced in the superior parts; occasionally they present the appearance of fresh crops. Sometimes the lung is found studded with miliary tubercles, affecting the pleura also, and most commonly some of the bronchial glands will be found enlarged and hard, sometimes melanotic. I have met with this condition of the lungs only twice or thrice; the subjects were children. I have seen several dissections in which the tubercles, called *granular* by Bayle, were found in immense numbers, dispersed with great regularity throughout the whole substance of the lungs, with intervening spaces of a red colour, having the appearance of the roe of a salmon.

Occasionally we find a chain of excavations extending throughout the whole lung, communicating with each other; the tubercles having become successively softened, and then discharged. In these excavations bands are seen stretching in every direction, like the fleshy columns in the ventricles of the heart, which seem to be composed of condensed pulmonary tissue, coated over with tuberculous matter, or, as it has occasionally appeared to me, coagulable lymph; these bands sometimes contain blood-vessels. Bayle makes the same remark, which is questioned, however, by Laennec, who states that he has "never even found a vessel of *any consequence* included within the substance of these bands;" but I have had several opportunities of demonstrating it to my class. Indeed, on one occasion a large blood-vessel in one of these bands gave way, and the child quickly died. This is the case noticed at page 241, and in which the blood found its way from the cavern by a fistulous opening into the œsophagus, as high up in the neck as to correspond to the inferior margin of the thyroid gland, and from thence passed into the stomach. It will be remarked that Laennec's expression is qualified, and I am ready to grant, that it is rare to find vessels of "*any consequence*" in these bands, because they must be compressed and diminished in size, in proportion to the condensation of the pulmonary tissue in which they are involved.

Laennec supposes, that the tubercles, during their increase, separate the blood-vessels, and press them to one side, which would no doubt hold good, if there were only one mass; but it is not a satisfactory explanation of the situation of the blood-vessels, when the lungs are completely studded with tubercles. On one occasion, I found a blood-vessel passing through a cavern, in one of the bands already described, which had become obliterated by a plug of coagulable lymph.

The ramifications of the bronchi seem to be obliterated; they are frequently found to open into a cavern, but I have never seen a trace of them in the tuberculous matter. In proportion as the tubercle becomes softened and discharged, the walls of the excavation are found more or less thickly covered with something like a membrane, which can be scraped off with the knife. According to Laennec, this membrane presents in different parts of its surface projecting points. Sometimes there is an appearance of two membranes, but occasionally the walls of the cavity are formed by the natural tissue of the lung itself, condensed, red, and charged with tuberculous matter. Sometimes the walls of the caverns appear to be lined by a membrane of fibro-cartilaginous consistence, occasionally filling up a small cavern entirely, presenting an appearance of cicatrization; in this way, it is supposed that phthisis is sometimes cured.

The mucous membrane of the bronchial tubes, is generally red and thickened; that portion of it which lines the trachea and larynx, is occasionally red, thickened, and pulpy, with ulcerations here and there. Ulcerations are sometimes seen as far down the tubes as the third and fourth division. Occasionally the epiglottis and larynx are also covered with numerous ulcerations, sometimes having the appearance of chancres.

The stomach occasionally presents diseased appearances, its mucous membrane being red, thickened, and velvety, with dark streaks, as if seared with a red-hot iron. In other cases, a great portion of the mucous membrane is found entirely removed, generally from the splenic extremity, leaving the naked vessels exposed, the rest of the membrane being thickened, soft, and reddish, with a great number of redder spots

in the neighbourhood of the parts already destroyed, as if a pen full of red ink had been spattered over the surface. Sometimes large red vessels are seen arborescing in the mucous membrane, which displays appearances here and there, as if portions had been removed by passing the nails roughly over the surface of the stomach. In one case, all the coats of the stomach except the peritoneal, were destroyed over a space about the size of a shilling. In very few cases have I observed tubercles in the mucous membrane of the stomach; they are frequently seen in that of the intestines, particularly in the caput cæcum, ascending colon, and termination of the ileum; they are sometimes situated in the mucous coat, and at others in the sub-mucous tissue. It is precisely in the situation above described that ulcerations are most frequently found, occasionally involving the whole of the colon down to the sigmoid flexure, which is much thickened in its texture, in some cases feeling contracted and hard like a small rope. The state of the mucous membrane has been often described in this work; but I must here state, that I have never seen ulcerations undergoing the healing process in the disease now under consideration; nor the mucous surface in that dark, livid, fleshy, and thickened state, which it frequently shews in dysentery. The peritoneum is sometimes found inflamed, thickened, and covered with flakes of lymph, which may be traced to points of the intestines, at which the ulcerations have extended through the other tissues, till it attacked the peritoneum itself; occasionally, indeed, a small perforation is found, which has admitted the passage of feculent matter into the cavity of the abdomen. The peritoneum is frequently the seat of tubercles. They first appear perhaps in the miliary form, and afterwards become crude. I had lately an opportunity of seeing tubercles formed on the peritoneal surface of the stomach of a child, who died of chronic peritonitis, occasioned by ulceration of the bowels. They did not extend deeper than the sub-serous coat.

The mesenteric glands are always found enlarged and altered in structure in phthisis, when the bowels are affected. The liver is sometimes found diseased, more frequently perhaps in women than in men; it is generally softened, enlarged, and

of a whitish or yellowish colour, feeling greasy to the touch. This is the fatty liver; I have seen it so large as to fill the iliac region, the right lobe extending down to the brim of the pelvis. The spleen is sometimes found tuberculated both in its substance and its capsule. The omentum is occasionally diseased in phthisical subjects. It is found thickened; fatty, like the liver, and tuberculated.

The brain is found in various states; sometimes there is effusion between the arachnoid and pia mater, or into the ventricles, the effect, in all probability, of impeded circulation. Tubercles are also observed in various situations in the brain, and in different stages, either solitary in some part of the cerebral substance, or spread generally over the arachnoid membrane, where I have frequently seen them in the miliary form, as well as in a crude state.

It has never been satisfactorily explained, why ulcerations should be found so frequently in the mucous membrane of the bowels in phthisis. It may perhaps be partly attributed to the obstructed state of the circulation, producing considerable vascular distention in its vessels, which at last become inflamed and ulcerated. There may be also something in the diseased condition of the blood itself, which cannot be perfectly decarbonized. I have little doubt that the mucous surface of the bowels, in the ordinary state of the system, assists the lungs in depriving the blood of carbon. After the lungs have been impeded, by the tubercular state of the pulmonary substance, perhaps the mucous surface of the bowels becomes more active, thereby causing inflammation and ulceration. There is no doubt that ulcerations in the intestine are sometimes owing to the irritation of tubercles in the part, but this speaks for itself. For further particulars relating to the morbid appearances found in this disease, the reader is referred to the work of M. Louis.

Treatment.—Although Laennec states that phthisis is cureable, still such a happy event is scarcely to be expected after the disease is formed. The only case which I conceive to be capable of a spontaneous cure, is that in which a solitary tubercle has existed, without any other disease of structure in the lungs. In examining the bodies of cholera subjects, we

frequently observed puckered marks and cicatrices, with corresponding pulmonary indurations, sometimes to a considerable extent. These were evidently the situation of tuberculous degenerations, from which the individuals had quite recovered. Professor Lizars has in his collection a very valuable specimen of a lung entirely excavated, nothing being left but an empty sac. The history of the case is quite complete; the man recovered, and was able to exist and support himself by manual labour, and died ultimately of typhus fever, unconnected with any pulmonary complaint. Much may be done in warding off the disease for many years, and retarding its progress after it is formed, by care in the management of an individual,—by attending to his diet, which should be nourishing and moderate,—to his clothing, which should be warm and light,—and to his exercise, which should never be carried the length of producing fatigue. Constipation should be avoided, and such an individual should remove to a steady climate if he can afford it. After the disease is somewhat advanced, a great deal of expense and trouble may be spared, by keeping the patient at home, because at this period change of climate can do no good; on the contrary, I have known it frequently to hasten the fatal termination, from fatigue and accidental exposure to cold during the journey.*

Much may also be done to retard the advancement of the disease, to mitigate the patient's sufferings, and to smoothe his passage into the vale of death, by avoiding every cause which can hurry the circulation and respiration, and preventing exposure in bad or changeable weather. Phthisical patients suffer occasionally very severely from pains in the chest, produced by pleuritic inflammation, traces of which are almost always seen on dissection. Small bleedings, leeching, and contra-irritation, should therefore be occasionally employed. Profuse perspirations are to be discouraged, as is also the exhibition of acids, which are so often given to prevent them. The bowels are to be assiduously watched to prevent consti-

* For much valuable information on this subject, I must refer my readers to Dr James Clarke's excellent work on Pulmonary Consumption, &c. &c. 1835.

pation, and the necessity of having recourse to strong purgatives, particularly when the disease is of long standing. When a laxative is necessary, it should be of the mildest description, and united perhaps with the extract of hyosciamus. Whenever a patient has more than the usual number of stools, particularly if they are watery, dark-coloured, and fetid, and when he begins to feel even slight uneasiness in the belly before going to stool, a few leeches should be applied to the abdomen, followed or not, according to circumstances, by the application of tartar-emetic ointment to produce irritation. It is wonderful, in many cases, to observe the good effects which follow the application of leeches in subduing the inflammation of the mucous membrane, thereby controlling the diarrhœa, and preventing the formation of ulcerations. Indeed, I have seen the best effects follow the application of leeches, even after a large extent of the mucous surface was ulcerated; but superficial irritation, produced sometimes by a mustard plaster, sometimes by hot spirits of turpentine, or by antimony ointment, will be often found of essential service, when the patient is too weak to bear bleeding. Peritonitis is sometimes occasioned by an extension of the ulceration to the peritoneum; therefore leeches and contra-irritation are sometimes adviseable. An occasional opiate is also serviceable; and I have seen the best effects produced by the exhibition of one-twelfth of a grain of strychnine, when the bowel complaint was very troublesome.

The duration of phthisis is very various: few survive above a year; indeed the generality of patients sink in about nine or ten months, and I have often observed that women die quicker than men. One case terminated fatally in about twenty days, where there was no other perceptible organic lesion, except the granular tubercles which affected every part of both lungs. Louis says he has seen a case fatal in twenty-four days, but that the general period in *acute phthisis* is about fifty days.

It was formerly mentioned, that Bayle divided phthisis into as many species as there have been diseased appearances found in the lungs. He has therefore treated of calculous concretions, under this title; together with the condition which has been called melanotic; and that which has been so well de-

scribed by Laennec, under the term "medullary cancer." It appears to me that Bayle was so far right, because when the lungs are thus affected, the individuals frequently emaciate, cough, and breathe in the same manner as in the tubercular disease.

The following account of the more rare varieties of structural derangement found in the lungs, is compiled from Laennec's work:—

1*st*, *Bodies of a Cartilaginous, Osseous, Calculous, and Cretaceous Nature.*—Sometimes cartilaginous cysts are seen, containing bony or chalky concretions. Laennec states that the bony matter is not perfect, containing a greater quantity of calcareous phosphate, and much less gelatine than true bone, and hence these bodies resemble a piece of stone more than bone. In some cases, he says they contain no gelatine, and resemble moistened chalk. There are also found points of ossification in various parts of the lungs. I have never seen them provided with cysts, which Laennec states are very rare indeed; the non-encysted ossifications are those to which I now allude. They are sometimes very numerous; they feel rough and pointed, and are generally adherent to the pulmonary tissue, which is sometimes of a cartilaginous hardness. Lately I dissected a lung studded over with this kind of production; each was surrounded with a melanotic mass, which, when situated on the surface of the lung, adhered to the pleura, in such a manner as to prevent a separation. Sometimes they are observed in the bronchial glands.

The chalky concretions are found in two states, one resembling soft chalk, the other like common mortar. In general, these are encysted. Sometimes calculous bodies, of the shape and size of small peas, are not only found on the surface of the lungs, but are also occasionally expectorated, which leads many to suspect that they are formed in the bronchial tubes; it is more probable they are formed in the substance of the lungs, and find their way into the air-passages by ulceration or absorption. When meeting with these large bodies on dissection, I have always seen considerable disease in the surrounding pulmonary tissue, sometimes in the state of recent inflammation, at others of grey or red hardening. I cannot sanction

the opinion, that these concretions are the product of powdery substances taken into the lungs, suspended in the air we breathe; but bronchitis is often produced in this manner. Laennec supports the same opinion, and his reasoning appears to be quite conclusive, (p. 380.) He believes that these concretions are consequent to tuberculous affections that have been cured; but I see no reason for agreeing with him in this opinion.

2*d*, *Melanosis of the Lungs.*—These productions, in their early or crude state, "possess a consistence equal to that of the lymphatic glands, and a homogeneous and somewhat humid composition; they are opaque, and in structure very much resemble the bronchial glands in the adult. When they begin to soften, a minute portion of fluid can be expressed from them, of a thin reddish character, intermixed with small blackish portions of a substance which is sometimes firm, sometimes friable, but which, even when friable, conveys to the touch an impression of flaccidity: in a more advanced stage, these portions first, and subsequently the whole mass in which they are contained, become quite friable, and are soon converted into a black paste. Melanotic matter is found in four different forms, encysted, non-encysted, generally infiltrated into the natural texture, and deposited on the surface of organs." (Page 383.)

Encysted Melanosis.—"The cysts enclosing this species are very regularly rounded, and vary in size from that of a small hazle-nut to that of a walnut. They have a very regular and equal thickness, which is never greater than half a line. Cellular substance appears to be the only tissue that enters into their composition. They adhere by means of a very fine cellular membrane to the substance of the organ in which they are situated, and from which they can be readily separated by dissection. Their interior surface is rather smooth, but adheres to the morbid matter which it surrounds. The medium of this adhesion appears to be a very fine imperfect cellular tissue, though it cannot always be distinguished. I have hitherto (says he) only found this variety of melanosis in the liver and lungs; and in the latter organ I have only as yet met with a single mass of it." (Page 383.)

Unencysted Melanosis.—" This variety is much less rare than the preceding. I have met with it (he says) in the lungs, the liver, the pituitary gland, and the nerves; but it has been since found in almost every organ. The volume of masses of this kind is quite indeterminate, varying from that of a millet seed to that of an egg, or more. They are also quite irregular in figure. They commonly adhere very closely to the parts in which they are situated; sometimes, however, they are united to these by a very fine, though sufficiently visible, cellular tissue, which permits their removal without any laceration. In this last case they are commonly of a rounded shape." (Page 384.)

Melanotic matter generally infiltrated into the natural texture. —" It frequently happens that this morbid matter, in place of being segregated in distinct masses, is disseminated throughout the organs in which it is found, and deposited between the particles or molecules of the natural tissue. The appearance and colour of parts affected in this manner, present a good many varieties, according to the texture of the organ, the quantity of matter deposited, and the particular condition of this matter. When the infiltration is recent, and in moderate quantity, the appearance of the affected part merely differs from the natural condition, in being intermixed with small black dots or striæ, the intermediate portions being quite of a healthy character. As the disease increases, the dots and striæ enlarge in number and volume, until the whole of the natural tissue of the part is lost in the morbid degeneration. It is usually only at this period of its progress that the melanosed matter begins to soften; but if the softening takes place before the complete removal of the natural tissue of the part, it frequently happens that this softens also, and intermingles with the morbid matter, the colour of which is thereby changed to brownish, yellowish, or greyish." (Page 384.)

There are various preparations in my Museum, which illustrate these very excellent descriptions of M. Laennec. There is one, shewing the last variety of this affection, which was found in the stomach of a dram-drinker. I have also the portion of a lung, the whole of which was affected with the disease, and which looks like a sponge filled with very black ink.

There is also a rare specimen of melanosis affecting the pleura pulmonalis.

A case, rapidly fatal, occurred to me in 1825. The subject was a middle-aged man, who began to complain on the 15th July, but did not take medical advice till the 19th, when he was found to complain of severe pain and weight in his head, some ringing in his ears, but no intolerance of light; the pain was increased by motion and coughing; his breathing somewhat accelerated, respiration 24 in a minute; but he had neither pain, cough, nor expectoration; complained of uneasiness in the abdomen, which was not increased on pressure; tongue whitish in the centre, and at the edges red; skin hot and dry; pulse 90, full and strong. Twenty ounces of blood were taken without any decided relief, and in five hours afterwards, twelve ounces more, which removed the headache. On the 20th, he was so much better as to be able to leave his bed, but became worse again towards evening. 21st, Again somewhat improved. By the stethoscope, the respiration was noisy and blowy, which led to a suspicion of the existence of crude tubercles, surrounded by healthy structure; respiration 30; pulse 112; tongue not improved; face somewhat flushed; skin hot and dry. He died next morning in what his friends called "a fit," which appeared to be asphyxia.

The lungs were found completely infiltrated with melanotic matter, but still crepitating; and they floated when placed in water: the spleen was affected in the same manner.

3*d*, *Medullary Sarcoma.*—According to Laennec, "medullary sarcoma may exist under three different forms, viz. 1*st*, encysted; 2*d*, in irregular masses without a cyst; and 3*d*, diffused in the tissue of an organ. In whichever of these forms it exists, it presents, in its progress, three different and distinct stages, viz. 1*st*, the incipient or crude state; 2*d*, its perfect state, in which it exhibits the resemblance to brain, which forms its special characteristic; and 3*d*, its soft or dissolved state.

"I shall first describe it as it is observed in the second or perfect state, as this is the condition in which the three varieties most nearly resemble each other, there being much difference between them in the first and last stages. In its per-

fect state it is homogeneous, of a milky whiteness, and very like the substance of the brain. In different parts it has commonly a slight rose tint. It is opaque when examined in mass, but in thin slices it is in a slight degree semi-transparent. Its consistence is like that of the human brain; but it is commonly less coherent, being more easily broken and comminuted by the finger. According to its degrees of density, it resembles one part of the brain more than another; but it is more commonly like the medullary substance of a brain that is more than ordinarily soft (or like that of a child's) than the healthy brain. When existing in any considerable extent, this species of cancer is, in general, supplied by a great many blood-vessels, the trunks of which ramify on the exterior of the tumours, or between their lobes only, while the minuter branches penetrate their substance. The coats of these vessels are very fine, and readily ruptured; and this accident gives rise to clots of extravasated blood in the interior of the tumours, sometimes of considerable size, which bear occasionally a striking resemblance to those found in the brain of subjects dead of apoplexy. Extravasations of this kind may sometimes be so considerable as to supplant almost the whole of the brain-like matter, so that the true nature of the tumour can only be ascertained by some small points, still remaining, of the original growth. This change occurring in superficial tumours of this kind, and being productive of much hæmorrhage, appears to me to have given rise to the name of *Fungus Hœmatodis*, applied to certain cancers by modern surgeons. Under this name, however, I am also convinced that they have confounded tumours of different kinds, especially those commonly called *varicose*, which are composed of an accidental tissue, very analogous to that of the *corpus cavernosum penis*. I have never observed any lymphatics in tumours of this sort, but it is probable that the circulating system is complete in them, as I have seen their substance deeply tinged with yellow in cases of icterus. The matter of encephaloid does not continue long in the state just described; it tends incessantly towards a softer condition, and, in a short space, its consistence scarcely equals that of a thickish paste. Then begins the last stage: the process of softening becomes more rapid, until the

morbid matter becomes as liquid as thick pus, still, however, retaining its whitish or rosy white tint. Sometimes at this period, or a little earlier, the blood extravasated from the vessels contained in the tumour, becomes intermixed with the morbid matter, so as to give it a dark red colour, and the resemblance of clots of pure blood. In a short time the extravasated blood is decomposed; the fibrin concretes, and, together with the colouring matter, unites with the brain-like matter of the tumour; and the serum is absorbed. In this condition the morbid growth retains no resemblance to brain; it is of a reddish or blackish colour, and of a consistence like that of paste, somewhat dry and friable. Sometimes the change of structure and appearance is so complete, that one would be led to consider the tumours as of a different kind, but for the existence in them of portions of the original matter still unchanged. In some cases, contemporaneously with tumours that have been changed in this manner, there will be found others retaining the original cerebral character; so that, in all cases, we are able, with a little practice, to discover the true nature of the tumour in all its stages." (Forbes's Translation, p. 393.)

"Such are the characters which this species of cancer presents in its two latter stages, and equally in all the three varieties. I shall now describe the characters of each of these varieties in the first or crude state.

"1. *Encysted Medullary Sarcoma.*—The size of this species is very various. I have seen the tumours as small as a hazle nut, and larger than a middle-sized apple. I have found them as large as this in the lungs. The cysts are of pretty equable thickness; and this is never more than half a line. They are of a greyish-white, silvery, or milky colour, and have a semi-transparency, more or less, according to their thickness. Their texture is altogether cartilaginous, and rarely fibrous; but it is much softer, and less easily broken by bending, than cartilage; on this account they must be ranged among the *imperfect cartilages.* The medullary matter contained in these cysts, can be easily detached from their inner coat. It is commonly divided into several lobes, by a very fine cellular tissue, which may be compared with the pia mater, and the more so from

the great number of blood-vessels which traverse it. The fineness and brittleness of these have been already noticed, and also their penetration of the cerebriform matter itself, to which they give a rose tint here and there. It is their rupture that gives rise to the clots of blood formerly mentioned. Sometimes, also, the trunks of these vessels are ruptured in the interstices of the lobules; and the blood being injected beneath the fine cellular substance which accompanies them, gives this the appearance of a distinct membrane. It is commonly in their early or crude stage that these tumours are divided into distinct lobes. These are especially observable on their surfaces, and have sometimes considerable resemblance to the convolutions of the brain. The cyst does not at all enter between these convolutions, nor does it even indicate on its surface their place or configuration. In this stage the medullary matter is pretty firm, often firmer than the fat of bacon. It is of a dull white, pearl grey, or even yellowish colour, and, in thin slices, has a slight degree of semi-transparency. When cut into, it appears subdivided interiorly into lobules, much smaller than those seen on its surface. These lobules are in such close contact as to leave no interval whatever; and their separation is merely indicated by the reddish lines traced by the vascular cellular tissue, by which the separation is effected. These lines rarely cross each other, but exhibit many irregular curves and convolutions. When these tumours pass into the second stage, their texture becomes more homogeneous, and all distinction of the small interior lobules is quite lost; the distinction, however, of the larger exterior lobes still continues. The blood-vessels which run between these lobes, and in the cellular tissue immediately investing the tumour, are much more developed than in the early stages of the disease, and it is only at this second stage, or as it approaches the third, that the extravasations of blood take place. The third stage begins, as I have already mentioned, when the medullary matter has acquired a consistence like pap or paste, or like that of a brain softened by commencing putrefaction. In this state, it has still much resemblance to cerebral substance. I have never found that the morbid growth ever softens still more, or that it is absorbed or evacuated, so as to leave an empty cyst

or cavity like tubercles; consequently it is not probable that we shall ever find pectoriloquism as a sign of this affection. Hitherto I have only found these encysted medullary tumours in the lungs, liver, and cellular substance of the mediastinum." (Page 395.)

"2. *Unencysted Medullary Sarcoma.*—Medullary tumours of this species are very frequently met with. Their size is very variable. I have seen them from the size of the head of a full-grown fœtus to that of a hemp seed. Their shape is commonly spheroid, but occasionally flattened, ovoid, or altogether irregular. Their external surface is lobulated, but the divisions are less regular than in the encysted species: their internal structure, in the two last stages, is precisely the same. The cellular membrane which invests them, is more or less marked, according as they are placed in a loose cellular tissue, or in the substance of a viscus of firm texture: in the latter case, their investing membrane is thinner and less distinct. In their first or crude stage, their semi-transparency is greater than afterwards; they are almost colourless, or have a very slight blueish tint in ocellated patches: they are pretty hard, and divided into numerous lobes. Their substance is then fatty, like lard; but when incised, it does not at all grease the scalpel, and it coagulates by heat, without shewing a particle of fat. The transition from the first to the second stage takes place in the following manner:—The substance of the tumour becomes more opaque, softer, whiter; and its inner distinction into lobules, for the most part, disappears. The original texture is observed longest in the neighbourhood of the external interlobular fissures. In this situation, I have found portions still in a state of induration, after the mass of the tumours had passed into the third stage. I am led to conclude that the encysted tumour follows precisely the same progress as that just described. The non-encysted medullary tumours may exist in any part of the body; but they are most frequently met with in the loose and abundant cellular tissue of the limbs, and in the larger internal cavities. I have met with them in the cellular membrane of the fore-arm, thigh, neck, and mediastinum; they are still more frequently found in the cellular substance around the kidneys, and the anterior part of the

spine ; and in these situations they often have a very large size. Although they are frequently found in the viscera, they are, however, much rarer there than in the cellular substance." (Page 397.)

In my collection there are several fine specimens of all these varieties of medullary sarcoma, and others unnoticed by any author, but which it would be tedious to describe.

CHAP. VII.

ASTHMA.

This term was formerly used to express every species of difficulty of breathing. Latterly it has been employed to signify a specific intermittent dyspnœa, independent of organic lesion; but I shall shew how erroneous such views of this disease are, when I come to treat of its pathology.

This disease is observed most frequently in people beyond the middle age, rarely in youth; it affects men oftener than women, and those of full habit of body more frequently than the spare; and it would seem to be occasionally hereditary.

Phenomena.—Attacks of asthma sometimes appear towards the afternoon, or at the moment the patient is going to bed, but more frequently they occur during the night; occasionally, indeed, the patient is seized during a sound sleep, and awakes with a sense of suffocation. In describing the disease, I shall confine myself to a few of the leading symptoms, because, depending upon so many morbid conditions of the lungs, heart, and perhaps the brain, the symptoms which may take place, have too wide a range of character to be taken into a short general sketch. Upon the approach of a paroxysm, the patient usually feels a sense of coldness over the surface of the body, indeed sometimes severe rigors take place; a sense of constriction is experienced in the chest, and difficulty of breathing, both of which are increased in the recumbent posture. He sits up, because he can then breathe

more easily; he demands more air to be admitted into the apartment; he employs all his efforts to dilate the chest, and then to empty the lungs. There is restlessness; occasional cough, which the patient makes efforts to perform, thinking to force something out of the lungs which impedes his breathing. *Expiration* is performed with a peculiar whistling sound, and sometimes it is sonorous. The face is either pale or livid. The eyes have an anxious expression. The extremities are frequently cold, even the nose and the ears; and the face and breast are covered with a cold dew. The pulse is in various states,—full and quick,—small and quick,—sometimes oppressed;—and it occasionally intermits. The skin is frequently discoloured; and there is often a troublesome flatulency and sense of fulness in the abdomen. These symptoms continue with more or less violence for some hours, or days, till expectoration takes place, which generally precedes a remission. The expectoration is sometimes scanty, at others copious. This is a short description of the symptoms as they generally occur. In slight cases, however, a sense of constriction in the chest only is complained of, which is sometimes relieved by the expectoration of a whitish mucus; but in more severe instances, the symptoms are much more violent and alarming, not only to the patient, but to the bystanders; instant suffocation being threatened, he solicits relief in the most urgent manner. A remission sometimes takes place immediately after the occurrence of profuse perspiration, and occasionally after a copious discharge of urine.

An individual may have an attack for three or four successive nights, and not be again affected for months; sometimes it returns every month for a number of years, and then disappears for a considerable time. Women are generally attacked immediately preceding the catamenia. The duration of each paroxysm is very various, from two or three days to three or four hours. One attack leads to another, and the paroxysms generally become more and more frequent and severe.

In describing this disease, authors have mentioned two varieties,—the humid and the dry. The first commences more gradually, and becomes slowly worse; the cough is frequently severe, attended with early and copious expectoration,

which produces relief; the mucous râle is heard almost from the beginning. The dry asthma commences suddenly, and becomes quickly severe, but does not continue long. The cough is slight; the expectoration very scanty, and observed at the close of the paroxysm only; the mucous râle is not heard till towards the conclusion of the attack,—even then it is very slight, and perhaps partial.

Causes.—Asthma is liable to return occasionally during the whole period of a man's life. The subsequent attacks depend on different circumstances in different constitutions. Some are affected by external heat, others by external cold; many by eating indigestible substances, or by overloading the stomach; and almost all asthmatics are affected by hurried exercise, and by any other cause that increases the rapidity of the circulation. It will generally be observed, that those who are predisposed to it, dread cold, moist weather, and stormy seasons. Individuals who follow particular occupations, would seem to be more subject to this affection than others, particularly those who are exposed to irritating vapours, and breathing an atmosphere in which different substances, in very fine powder, are suspended. Causes particularly affecting the nervous system, would also seem to be capable of producing paroxysms, such as passions of the mind, &c.

Pathology.—It is generally admitted, that that kind of dyspnœa which is now under consideration, and which is commonly known by the name of asthma, is produced by various diseased states of the lungs and heart. Chronic bronchitis, emphysema, and congestion, are the three conditions of the lungs which most frequently produce asthma; and I believe it is likewise occasioned by some kind of nervous irritation, the nature of which is yet unknown. It is, perhaps, from this view, that the doctrine of a spasmodic structure in the air-tubes has arisen.

Having already treated of chronic bronchitis, it is unnecessary to say more upon the subject in this place; I shall therefore proceed to describe emphysema of the lungs, of which there are, according to Laennec, two kinds; 1*st*, That which consists in the simple dilatation of the air-cells, which he calls pulmonary or vesicular emphysema; and, 2*d*, That which is

characterized by infiltration of air between the lobules of the lungs, which he terms interlobular emphysema.

In the first, the size of the vesicles is much increased, and also less uniform; the greater number equal or exceed the size of a millet-seed, while some attain the magnitude of cherry-stones, or even French beans. The largest are, in all probability, produced by the union of several of the air-cells, in consequence of the rupture of the intermediate partitions; sometimes, however, they appear to arise from the simple enlargement of a single vesicle. The bronchial tubes, especially the small ramifications, are sometimes very evidently dilated in those portions of the lung where the emphysema exists.

The interlobular emphysema, according to the same author, is characterized by infiltration of air between the lobules of the lung, and must be considered as necessarily depending on a rupture of some of the air-cells in the first place, and the consequent extravasation of the air contained in them. When the extravasation exists near the root of the lungs, it sometimes extends to the mediastinum, thence crosses to the neck, and occasionally spreads over the whole sub-cutaneous and intermuscular-cellular substance of the body.

The pathognomonic signs of the pulmonary emphysema, says Laennec, "are furnished by a comparison of the indica tions derived from percussion and mediate auscultation. The respiratory sound is inaudible over the greater part of the chest, and is very feeble in the points where it is audible; at the same time, a very clear sound is produced by percussion. From time to time, also, we perceive, while exploring the respiration or cough, a slight sibilous rattle, or sound of the valve, as in the dry catarrh, occasioned by the displacement of the pearly sputa." When existing in a high degree, it may be recognized by a sign which is altogether pathognomonic, which Laennec calls, the crepitous rattle with large bubbles. "In this case, the sound during inspiration or coughing, is like that which would be produced by blowing into half-dried cellular substance." (Page 158.)

In the inter-lobular emphysema, Laennec assures us "there is one sign completely pathognomonic, viz. the *dry* crepitous

rattle with large bubbles, when very distinct and continuous, or nearly so. Together with this sign, (continues he,) we usually perceive, during inspiration and expiration, a sound or sensation as of one or more bodies rising and falling, and rubbing against the ribs." (Page 171.)

Emphysema of the lungs is a common disease in horses, and is the great cause of what is called *broken-wind;* and is more common in man than is generally imagined. It is produced by various causes, as lifting a heavy weight; it occurs during the act of bearing-down in labour; but more frequently it is a consequence of violent coughing in cases of bronchitic inflammation; indeed, I have scarcely ever witnessed a dissection of a person who died of bronchitis or hooping-cough, without seeing pulmonary emphysema.

For a more particular account of these morbid states, the reader is referred to the work of Laennec.

There cannot be a doubt that the nervous system has a powerful influence on the functions of the lungs, when labouring under disease, as well as in health; and I imagine no one can deny that asthma may be produced, either in consequence of some diseased action in the brain, or in the nerves themselves which supply the lungs. It has been attempted to be shewn, by Reisseissen and Laennec, that the bronchial tubes possess a muscular structure, through the agency of which the air-vessels contract, when under the influence of spasm; but this is not a new idea on the part of Reisseissen or Laennec, for Cullen makes the following statement:— "From the whole of the history of asthma now delivered, I think it will readily appear, that the proximate cause of this disease is a preter-natural, and in some measure, a spasmodic constriction of the muscular fibres of the bronchiæ, which not only prevents the dilatation of the bronchiæ necessary to a free and full inspiration, but gives also a rigidity which prevents a full and free expiration." (Par. 1384.) But neither is this an original idea of Cullen's, for it was entertained long before his time by Hoffman and Willis. It is foreign to the object of this work, to enter into anatomical controversy, and unnecessary in this instance, for even Laennec states that he had "met with only a very small number of asthmatics, in whom there was evidence of pulmonary spasm, without any attend-

ant catarrhal affection; but some few I have met with. On the other hand, I have known a great number of patients, in whom the catarrh, whether dry, pituitous, or mucous, was too slight in degree, or too small in extent, to be considered as the real cause of this asthma." (Page 412.) Because, perhaps, there might be in these cases some organic lesion of the heart and large vessels, or the co-existence of cerebral irritation. These observations lead me to remark, that there is almost always something more in this disease than the original organic lesion in the lungs themselves; this, experience has frequently led me to trace to sudden congestion of the lungs, which flattens the air-vessels, and prevents them from dilating.

Various diseases of the heart produce asthma; the most frequent are dilatations of its cavities, diseases of its valves; and aneurism of the aorta, of which more hereafter.

Treatment.—From want of attention to the pathological condition of the body, the treatment of asthma has hitherto been uncertain and empirical. Some highly extol one remedy, and some another; some always use the lancet, and others invariably condemn it. Although an advocate for occasional bleeding in asthma, yet I am convinced, that no remedy, except the indiscriminate use of opium, has done more mischief. There are two circumstances only in which bleeding should be had recourse to; 1*st*, where we have evidence of acute action in any tissue of the lungs, superadded to any of the organic lesions already mentioned; 2*d*, when there is much venous engorgement of the lungs. In old chronic cases, it must always be a doubtful, and occasionally a dangerous remedy. Dr Bree assures us, that he repeatedly tried bleeding, but does not think the paroxysm was ever shortened an hour by the remedy; and in old people he found it injurious. It may be mentioned, that Dr Bree was himself an asthmatic, and after paying much practical attention to the disease, he wrote a Treatise upon the subject, which is worthy of perusal. Bleeding must be employed early in the paroxysm, or not at all, unless the patient is threatened with suffocation. The pediluvium is to be instantly had recourse to, which I have known to arrest a paroxysm; as well as inhaling the

vapour of hot water. The apartment is to be freely ventilated, and too many people are not to remain in the room. Laxatives are always necessary, as confined bowels aggravate the complaint. Vomiting is a favourite remedy with many, and is useful principally in two cases,—when there is evidence of a load of food being in the stomach,—and when we know that the disease depends upon chronic bronchitis. In the last case, vomiting will assist in clearing the air-passages of superabundant mucus. In almost all cases, contra-irritation is useful, whether produced by mustard plasters, stimulating embrocations, or blisters. Strong coffee was formerly recommended by Sir John Floyer, from the relief he experienced in his own person, and it has since been as highly lauded by his fellow-sufferer Dr Bree. With respect to opium, very opposite opinions have been maintained. Laennec speaks strongly in favour of the whole class of narcotics, with a view of producing sleep, upon the theory of bringing patients so affected, as nearly as possible to the level of *bats*, and other animals which hybernate, and consume nearly a hundred times less air when in a state of torpidity. He seems to have been influenced by an idea of producing relaxation of the muscular fibres of the air-tubes, thereby overcoming the spasm of the lungs. The following narcotics are recommended by Laennec,—opium, belladonna, stramonium, phellandrium aquaticum, aconitum napellus, colchicum, tobacco smoked or taken internally, cicuta, dulcamara, hyosciamus. With respect to tobacco, it may be mentioned, upon the authority of Dr Ferrier, that Baglivi used the "*Julapum Tabaci*" in cases of asthma. (Reflections, p. 204.)

If the disease generally depended on spasm, opium should be useful in a great number of cases; but I am convinced, from what I have seen in practice, that it is the most dangerous of all the remedies which have hitherto been recommended. Dr Bree tells us, that four grains nearly sent him into the next world. In truth, it is a remedy which must very often interfere with the efforts of the constitution for relieving the patient; more particularly in that form of the disease produced by chronic bronchitis, when opium, by allaying the cough, promotes a collection of mucus in the air-passages: hence the

common observation, that opiates dry up the expectoration. I have seen some individuals very much relieved by smoking tobacco, and some by smoking stramonium.

As the disease is frequently observed to terminate by expectoration, the class of medicines called expectorants has been much employed. In fact, if routine practitioners were asked what should be done for a patient in a fit of asthma, they will be found either to order bleeding, or to give an expectorant. I have seen them often tried, but very seldom with any good effect. Of this class, squills is much in use, together with the fœtid gums.

After the termination of the paroxysm, tonics are frequently recommended. Dr Bree speaks much in praise of a remedy composed of nitric acid, hyosciamus, and squills. Some tell us to avoid warm bathing, and to use the cold bath as a tonic during the intervals; the cold bath agrees with some better than the warm, and I have seen both do much mischief.

Issues, setons, and cauteries, have all been used as contra-irritants, and it is worthy of remark, that many fits of asthma have taken place immediately after the disappearance of a cutaneous eruption. I have myself witnessed examples of this kind, and I have been acquainted with asthmatics who were occasionally affected with cutaneous eruptions, and who, although they complained of much distress from the itching and tingling of the skin, were yet contented with their lot, and invariably expressed themselves as being certain of an attack of asthma if the eruptions were repelled. The observation of such circumstances, has led me to insist much on the propriety of employing contra-irritation in all diseases of the chest, but particularly in those of a chronic nature.

The sub-carbonate of iron has been recommended, but I cannot speak from experience of its effects.

A very dangerous complication of asthma with anasarca occasionally takes place; the routine practitioner amuses himself, and distresses his patient, by "pumping out the water." But I cannot too strongly condemn this as a general practice, because the remedies weaken, sometimes hasten the fate of the patient, and do not reach the root of the evil.

Galvanism is another remedy which has been much lauded,

not only in this country, but on the Continent. Dr Wilson Philip, to whose exertions in endeavouring to improve the science of medicine, the profession stands deeply indebted, directed his attention to this subject. He made many experiments on animals, in conducting an inquiry into the laws of the vital functions; and among others, he divided the pneumogastric nerves, in order to diminish the nervous influence in the lungs and stomach; the digestive powers were found to be thereby much impaired or suspended, and dyspnœa was produced. He then directed galvanic influence towards the lungs and stomach, and he observed that the animal could be made to breathe easily, and digest its food. After these experiments had been repeated and confirmed, Dr Wilson Philip was naturally led to inquire what diseases depended on a failure of the nervous influence. Judging from analogy and observation, he thought it probable that indigestion and asthma were two, at least, of the number. This is a short view of the circumstances which led Dr Wilson Philip to expect relief from galvanism in *habitual asthma;* which name he has given to that form of the disease, in which the breathing is constantly oppressed,—better and worse at different times, but never free,—and often continues to get worse in spite of every means we can employ. He states, that he used galvanism in many cases, and almost uniformly with relief, applying as much of the galvanic influence as patients could easily bear. The period varied from five to fifteen minutes, before relief was experienced; and he generally found, that the stronger the sensation excited, the more speedy the relief; he found from eight to fifteen four-inch plates of zinc and copper sufficient; the fluid used, was one part of muriatic acid to one hundred and twenty of water. Some people required more than sixteen plates, and a few could not bear eight. It is a curious fact, that on the first application of galvanism, a person may experience little sensation from the operation of twenty-five or thirty plates, yet afterwards he may not be able to bear more than six or eight. He applied it in the following manner;—he placed two thin plates of metal dipped in water, one on the nape of the neck, the other on the lower part of the epigastric region. The wires from the different ends of the trough were

brought in contact with the plates; in this way, the galvanic influence was sent through the lungs, as much as possible in the direction of the nerves. The operation was discontinued as soon as the patient said his breathing was easy, any further application being found quite unnecessary. We are assured, that this means afforded relief to those who had laboured under oppressed breathing for ten or twenty years, as readily as in more recent cases; therefore, we must join Dr Wilson Philip in taking this as a proof, that no organic lesion existed in the lungs. For further information on this interesting topic, the reader is referred to his work, entitled "Inquiry into the Laws of the Vital Functions."

Whatever differences of opinion exist respecting the nature and seat of asthma, and the treatment proper to be pursued during a paroxysm, all agree in recommending, that the diet of an asthmatic should be light, sufficiently nourishing, and easy of digestion; his clothing warm; and that he should avoid exposure in cold damp weather, particularly when the wind is in the East. The bowels should be kept easy, but it is proper to mention, that I have known a paroxysm brought on by hypercatharsis as well as constipation.

END OF VOLUME FIRST.

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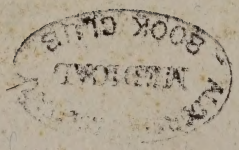
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